BiPAC 7300(N)

802.11n ADSL2+ Firewall Router

User Manual

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Table of Contents

Chapter 1 4
1.1 Introducing the BiPAC 7300(N) 4
1.2 Features 6
1.3 Applications of the BiPAC 7300(N) 9
Chapter 2 10
2.1 Important Notes 11
2.2 Package Contents 11
2.3 The Front LEDs 12
2.4 The Rear Ports 13
2.5 Cabling 15
Chapter 3 16
3.1 Before Configuration 16
3.2 Factory Default Settings 25
3.3 LAN and WAN Port Addresses 26
3.4 Information from your ISP 26
3.5 Configuring with your BiPAC 7300(N) 27
Chapter 4 31
4.2 Quick Start 33
4.3 WAN 34
4.4 WLAN (Only available for 7300N) 35
Chapter 5 41
5.1 Status 42
5.1.1 ADSL Status 44
5.1.2 ARP Table 46
5.1.3 DHCP Table 46
5.1.4 System Log 47
5.1.5 Firewall Log 47
5.1.6 UPnP Portmap 48
5.2 Quick Start 49
5.3 Configuration 54
5.3.1 LAN (Local Area Network) 54
5.3.2 WAN (Wide Area Network) 73
5.3.3 System 83
5.3.4 Firewall 88
5.3.5 QoS (Quality of Service) 99
5.3.6 Virtual Server 105
5.3.7 Wake on LAN 110
5.3.8 Time Schedule 110
5.3.9 Advanced 112

5.4 Save Configuration to Flash 127
5.5 Restart 127
5.6 Logout 128
Chapter 6 129

Chapter 1
Introduction

1.1 Introducing the BiPAC 7300(N)

Thank you for purchasing the BiPAC 7300(N) Router. Your new router is an all-in-one unit that combines an ADSL modem, ADSL2/2+ router and Ethernet network switch to provide everything you need to get the machines on your network connected to the Internet over an ADSL broadband connection.

The BiPAC 7300(N) router complies with ADSL2+ standards for deployment worldwide and supports downstream rates of up to 12 or 24 Mbps and upstream rates of up to 3 Mbps. Designed for small office, home office and residential users, the router enables even faster Internet connections. You can enjoy ADSL services and broadband multimedia applications such as interactive gaming, video streaming and real-time audio much easier and faster than ever before.

The BiPAC 7300(N) supports PPPoA (RFC 2364 – PPP (Point-to-Point Protocol) over ATM Adaptation Layer 5), RFC 1483 encapsulation over ATM (bridged or routed), PPP over Ethernet (RFC 2516) to establish a connection with your ISP. Your new router also supports VC-based and LLC-based multiplexing.

The perfect solution for connecting a small group of PCs to a high-speed broadband Internet connection, the BiPAC 7300(N) allows multiple users to have high-speed Internet access simultaneously.

Your new router also serves as an Internet firewall, protecting your network from access by outside users. Not only does it provide a natural firewall function with Network Address Translation (NAT), it also provides rich firewall features to secure your network. All incoming data packets are monitored and filtered. You can also configure your new router to block internal users from accessing the Internet.

The BiPAC 7300(N) provides two levels of security support. First, it masks LAN IP addresses making them invisible to outside users on the Internet, so it is much more difficult for a hacker to target a machine on your network. Second, it can block and redirect certain ports to limit the services that outside users can access. To ensure that games and other Internet applications run properly, you can open specific ports for outside users to access internal services on your network.

The Integrated DHCP (Dynamic Host Control Protocol) client and server services allow multiple users to get IP addresses automatically when the router boots up. Simply set local machines as a DHCP client to accept a dynamically assigned IP address from the DHCP server and reboot. Each time a local machine is powered up; the router recognizes it and assigns an IP address to instantly connect it to the LAN.

For advanced users, Virtual Service (port mapping) functions allow the product to provide limited visibility to local machines with specific services for outside users. For instance, a dedicated web server can be connected to the Internet via the router and then incoming requests for web pages that are received by the router can be rerouted to your dedicated local web server, even though the server now has a different IP address.

Virtual Server can also be used to re-task services to multiple servers. For instance, you can set the router to allow separated FTP, Web, and Multiplayer game servers to share the same Internet-visible IP address while still protecting the servers and LAN users from hackers.

1.2 Features

Express Internet Access – ADSL2/2+ capable

The BiPAC 7300(N) complies with ADSL worldwide standards. Supporting downstream rates of 8 Mbps with ADSL, the router is capable of up to 12/24 Mbps with ADSL2/2+, and upstream rates of up to 3 Mbps. Users enjoy not only high-speed ADSL services but also broadband multimedia applications such as interactive gaming, video streaming and real-time audio which are easier and faster than ever. The router is compliant with Multi-Mode standard (ANSI T1.413, Issue 2; G.dmt (ITU G.992.1); G.hs (ITU G994.1); G.dmt.bis (ITU G.992.3); and G.dmt.bisplus (ITU G.992.5).

802.11n Wireless AP with WPA Support

With integrated 802.11n Wireless Access Point in the router, the device offers a quick and easy access among wired network, wireless network and broadband connection (ADSL) with single device simplicity, and as a result, mobility to the users. In addition to 300 Mbps 802.11n data rate, it also interoperates backward with existing 802.11g and 802.11b equipment. The Wi-Fi Protected Access (WPA) and Wired Equivalent Privacy (WEP) supported features enhance the security level of data protection and access control via Wireless LAN.

Fast Ethernet Switch

A 4-port 10/100Mbps fast Ethernet switch is built-in with automatic switching between MDI and MDI-X for 10Base-T and 100Base-TX ports, with auto detection allowing you to use either straight or cross-over Ethernet cables.

EWAN

Besides using ADSL to get connected to the Internet, BiPAC 7300(N) offers its Ethernet port 1 as a WAN port to be used to connect to Cable Modems, VDSL and fibre optic lines. This alternative, yet faster method to connect to the internet will provide users more flexibility to get online.

Multi-Protocol to Establish a Connection

The router supports PPPoA (RFC 2364 - PPP over ATM Adaptation Layer 5), RFC 1483 encapsulation over ATM (bridged or routed), PPP over Ethernet (RFC 2516) to establish a connection with an ISP. The router also supports VC-based and LLC-based multiplexing.

Universal Plug and Play (UPnP) and UPnP NAT Traversal

This protocol is used to enable simple and robust connectivity among stand-alone devices and PCs from many different vendors, and it makes setting up a network simple and affordable. UPnP architecture leverages TCP/IP and the Web to enable proximity networking in addition to control and data transfer among networked devices. With this feature enabled, you can seamlessly connect to Net Meeting or MSN Messenger.

Network Address Translation

Network Address Translation (NAT) allows multiple users to access outside resources such as the Internet simultaneously with one IP address/one Internet access account. Many application layer gateways (ALG) are supported such as web browser, ICQ, FTP, Telnet, E-mail, News, Net2phone, Ping, NetMeeting, IP phone and others.

Firewall

NAT technology supports simple firewalls and provides options for blocking access from the Internet, like Telnet, FTP, TFTP, WEB, SNMP and IGMP.

Domain Name System Relay

Domain Name System (DNS) relay provides an easy way to map a domain name with a user-friendly name such as www.google.com with an IP address. When a local machine sets its DNS server to the router's IP address, every DNS conversion request packet from the PC to this router is forwarded to the real DNS on the outside network.

Dynamic Domain Name System (DDNS)

The Dynamic DNS service allows you to alias a dynamic IP address to a static hostname. This dynamic IP address is the WAN IP address. To use the service, you must first apply for an account from a DDNS service such as http://www.dyndns.org/.

PPP over Ethernet (PPPoE)

The BiPAC 7300(N) provides an embedded PPPoE client function to establish a connection. You get greater access speed without changing the operation concept, while sharing the same ISP account and paying for one access account. No PPPoE client software is required for the local computer. Automatic Reconnect and Disconnect Timeout (Idle Timer) functions are also provided.

Quality of Service (QoS)

QoS gives you full control over which types of outgoing data traffic should be given priority by the router, ensuring important data like gaming packets, customer information, or management information move through the router ay lightning speed, even under heavy load. The QoS features are configurable by Internal IP address, External IP address, protocol, and port. You can throttle the speed at which different types of outgoing data pass through the router, to ensure P2P users don't saturate upload bandwidth, or office browsing doesn't bring client web serving to a halt. In addition, or alternatively, you can simply change the priority of different types of upload data and let the router sort out the actual speeds.

Virtual Server:

You can specify which services are visible to outside users. The router detects an incoming service request and forwards it to the specific local computer for handling. For example, you can assign a PC in a LAN to act as a Web server inside and expose it to the outside network. Outside users can browse inside the web server directly while it is protected by NAT. A DMZ host setting is also provided for local computers exposed to the outside Internet network.

Dynamic Host Configuration Protocol (DHCP) Client and Server

On a WAN site, the DHCP client obtains an IP address from the Internet Service Provider (ISP) automatically. On a LAN site, the DHCP server allocates a range of client IP addresses, including subnet masks and DNS IP addresses and distributes them to local computers. This provides an easy way to manage the local IP network.

Rich Packet Filtering

This feature filters the packet based on IP addresses as well as Port numbers. Filtering packets to and from the Internet provides a higher level of security control.

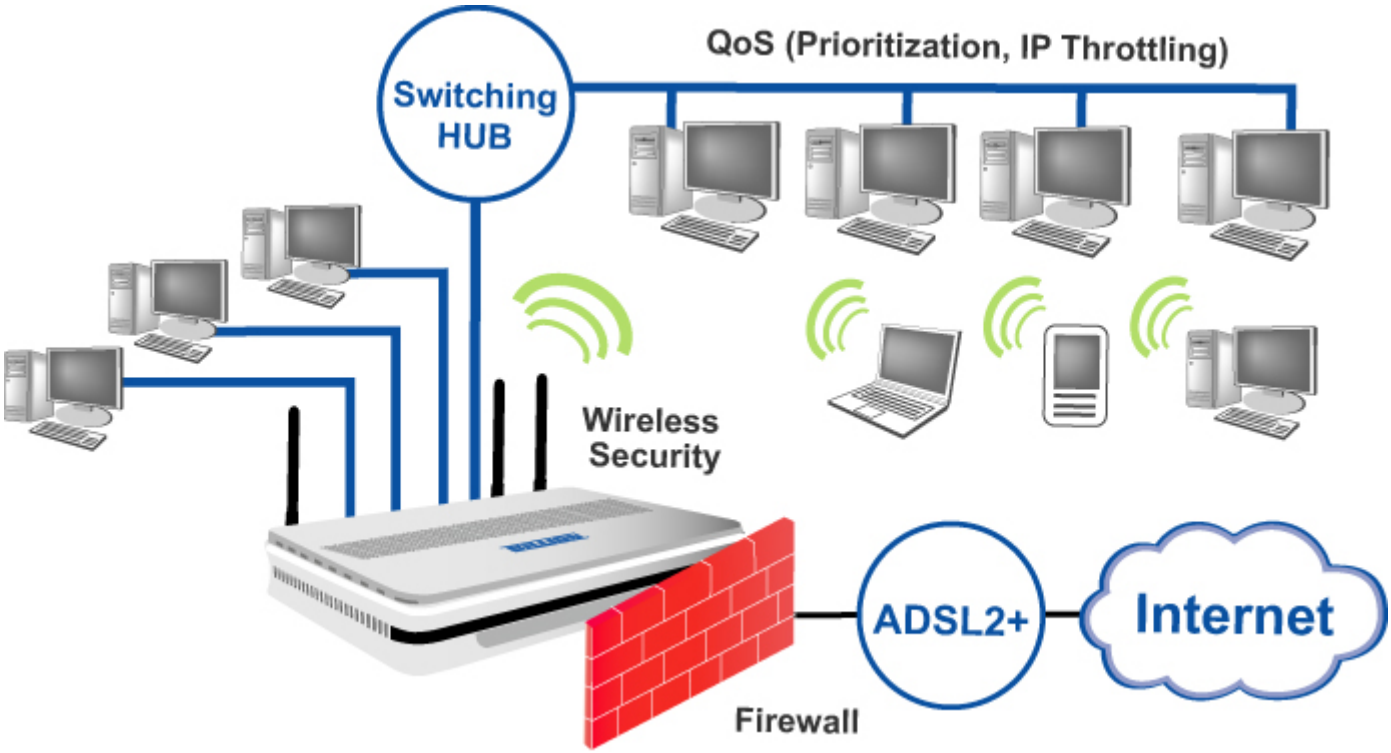
Web-based GUI

A web-based GUI offers easy configuration and management. It also supports remote management capability for remote users to configure and manage this product.

Firmware Upgradeable

You can upgrade the router with the latest firmware through its web-based GUI.

1.3 Applications of the BiPAC 7300(N)



Chapter 2
Product Overview

Standards-Based Technology

The BiPAC 7300(N) Wireless Router utilizes the **802.11n** standard. The IEEE **802.11n** standard is an extension of the 802.11g standard. It increases the data rate up to 300 Mbps within the 2.4GHz band, utilizing **OFDM technology.** This means that in most environments, within the specified range of this device, you will be able to transfer large files quickly or even watch a movie in MPEG format over your network without noticeable delays. This technology works by transmitting high-speed digital data over a radio wave utilizing **OFDM** (**O**rthogonal **F**requency **D**ivision **M**ultiplexing) technology. **OFDM** works by splitting the radio signal into multiple smaller sub-signals that are then transmitted simultaneously at different frequencies to the receiver. **OFDM** reduces the amount of **crosstalk** (interference) in signal transmissions.

Installation Considerations

The BiPAC 7300(N) Wireless Router lets you access your network, using a wireless connection, from virtually anywhere within its operating range. Keep in mind, however, that the number, thickness and location of walls, ceilings, or other objects that the wireless signals must pass.

Keep the number of walls and ceilings between the BiPAC 7300(N) and other network devices to a minimum - each wall or ceiling can reduce your BiPAC 7300(N) wireless product's range from 3-90 feet (1-30 meters.)

Position your devices so that the number of walls or ceilings is minimized. Be aware of the direct line between network devices. Position the devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception. Building Materials can impede the wireless signal - a solid metal door or aluminium studs may have a negative effect on range.

Try to position wireless devices and computers with wireless adapters so that the signal passes through drywall or open doorways and not other materials. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate extreme RF (radio frequency) noise.

2.1 Important Notes

Warning

- ✓ Do not use the BiPAC 7300(N) in high humidity or high temperatures.
- ✓ Do not use the same power source for the BiPAC 7300(N) as other equipment.
- ✓ Do not open or repair the case yourself. If the BiPAC 7300(N) is too hot, turn off the power immediately and have it repaired at a qualified service center.
- ✓ Avoid using this product and all accessories outdoors.

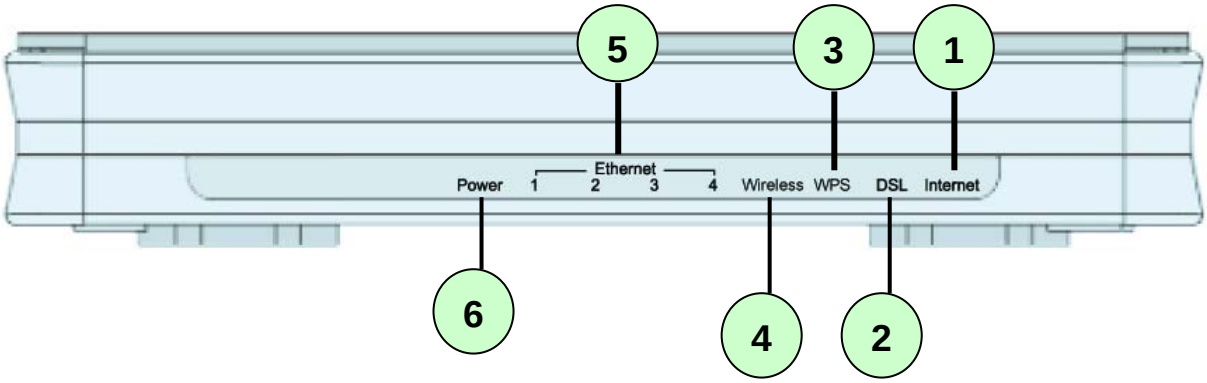
Attention

- ✓ Place the BiPAC 7300(N) on a stable surface.
- ✓ Only use the power adapter that comes with the package. Using a different voltage rating power adaptor may damage the router.

2.2 Package Contents

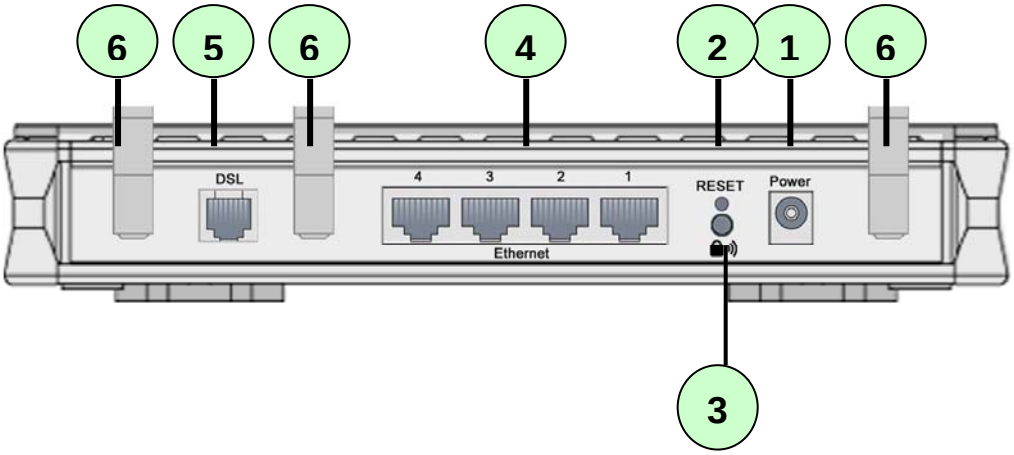
- BiPAC 7300(N) (802.11n) ADSL2+ Router
- CD-ROM containing the online manual
- RJ-11 ADSL/telephone Cable
- Ethernet (CAT-5 LAN) Cable
- AC-DC power adapter
- Quick Start Guide
- Antennas (3 pcs) (wireless model only)

2.3 The Front LEDs



LED		Meaning
1	**Internet**	Lit red when WAN port fails to get IP address. Lit green when WAN port gets IP address successfully.
2	**DSL**	Lit when successfully connected to an ADSL DSLAM ("linesync").
3.	**WPS (Only available for 7300N)**	Blinking when WPS is in progress.
4	**Wireless (Only available for 7300N)**	Lit green when the wireless connection is established. Flashes when sending/receiving data.
5	**Ethernet Port 1-4**	Lit when connected to an Ethernet device. Green for 100Mbps; Orange for 10Mbps. Blinking when data is Transmitted / Received.
6	**Power**	When the power is plugged in, it will lit Red and when the system is ready, it will lit Green. Whilst the system is rebooting or firmware upgrading, the LED light flashes.

2.4 The Rear Ports



Port		Description
1	**Power**	Connect the supplied power adapter to this jack.
2	**Reset**	After the router is powered on, press this reset button using the end of paper clip or other small pointed object to reset the router and to restore it to factory default settings. 1. Recovery procedures for non-working routers (e.g. after a failed firmware upgrade flash). 2. Recovery procedures for a lost web interface password:
3	**WPS (Only available for 7300N)**	Push WPS button to trigger Wi-Fi Protected Setup function.
4	**Ethernet**	Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the four LAN ports when connecting to a PC or an office/home network of 10Mbps or 100Mbps. ***Note: Only Ethernet port 1 can be used for EWAN.***
5	**DSL**	Connect the supplied RJ-11 (“telephone”) cable to this port when connecting to the ADSL/telephone network.
6	**Antenna (Only available for 7300N)**	Connect the detachable antenna to this port.

The detail instruction in Reset Button

1. Recovery procedures for non-working routers (e.g. after a failed firmware upgrade flash):

Hold the *Reset Button* on the back of the modem in. Keep this button held in and turn on the modem. Once the lights on the modem have stopped flashing, release the *Reset Button.* The modem's emergency-reflash web interface will then be accessible via http://192.168.1.254 where you can upload a firmware image to restore the modem to a functional state. Please note that the modem will only respond via its web interface at this address, and will not respond to ping requests from your PC or to telnet connections.

Before powering on the router to enter the recovery process, please configure the IP address of the PC as 192.168.1.100 and proceed with the following step by step guide.

1. Power the router off.
2. Hold the "Reset Button".
3. Power on the router. Then Router's IP will reset to Emergency IP address (Say 192.168.1.254)
4. Download the firmware.

2.5 Cabling

One of the most common causes of problems is because of bad cabling or ADSL line(s). Make sure that all connected devices are turned on. On the front of the product is a bank of LEDs. Verify that the LAN Link and ADSL line LEDs are lit. If they are not, verify that you are using the proper cables.

Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analog modems) have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and to ensure that all line filters are correctly installed and the right way around. Missing line filters or line filters installed being the wrong way around can cause problems with your ADSL connection, which includes frequent disconnections.

Chapter 3
Installation

You can configure the BiPAC 7300(N) router through the convenient and user-friendly interface of a web browser. Most popular operating systems such as Linux and Windows 7/Vista/98/NT/2000/XP/Me include a web browser as a standard application.

3.1 Before Configuration

PCs must have a properly installed Ethernet interface which connects to the router directly or through an external repeater hub. In addition, PCs must have TCP/IP installed and configured to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. The default IP address of the router is **192.168.1.254** and the subnet mask is **255.255.255.0** (i.e. any attached PC must be in the same subnet, and have an IP address in the range between 192.168.1.1 and 192.168.1.253). The easiest way is to configure the PC is to obtain an IP address automatically from the router using DHCP. If you encounter any problems accessing the router's web interface you are advised to **uninstall** any kind of software firewall on your PCs, as they can cause problems when trying to access the 192.168.1.254 IP address of the router.

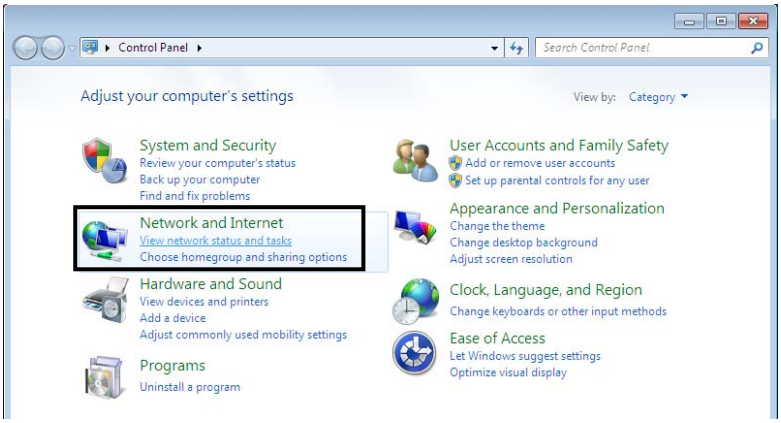
Please follow the steps below for installation on your PC's network environment. First of all, check your PC's network components. The TCP/IP protocol stack and Ethernet network adapter must be installed. If not, please refer to your Windows-related or other operating system manuals.

Any TCP/IP capable workstation can be used to communicate with or through the BiPAC 7300(N). To configure other types of workstations, please consult the manufacturer's documentation.

Network Configuration

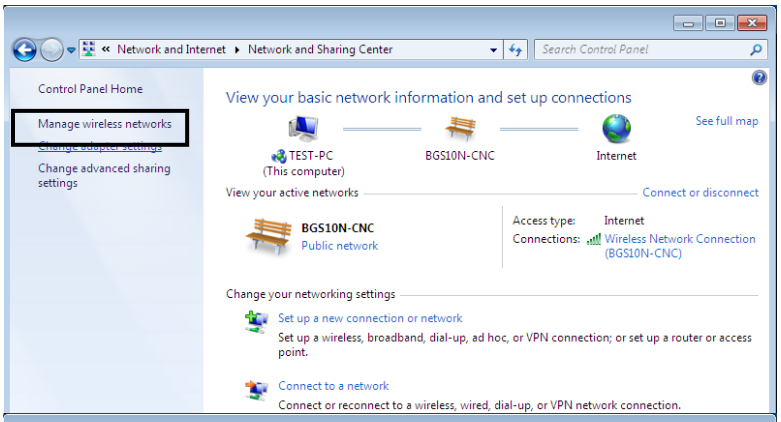
Configuring a PC in Windows 7

1. Go to **Start**. Click on **Control Panel**.

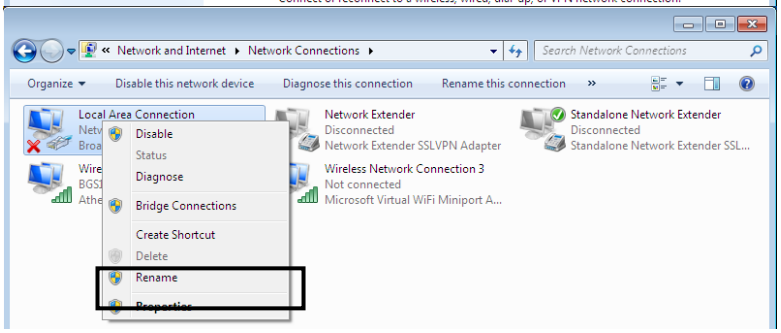


2. Then click on **Network and Internet**.

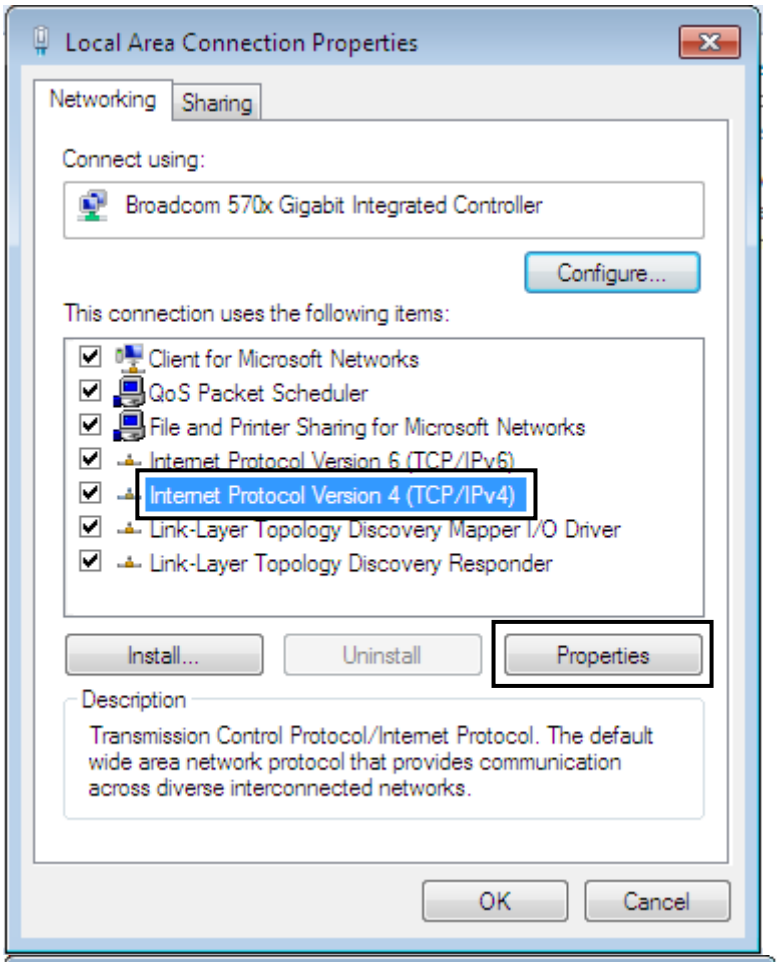
3. When the **Network and Sharing Center** window pops up, select and click on **Change adapter settings** on the left window panel.


Network and Internet
Network and Sharing Center
Search Control Panel
Control Panel Home
Manage wireless networks
Change adapter settings
Change advanced sharing settings
View your basic network information and set up connections
See full map
TEST-PC
(This computer)
BGS10N-CNC
Internet
View your active networks
Connect or disconnect
BGS10N-CNC
Public network
Access type: Internet
Connections: Wireless Network Connection (BGS10N-CNC)
Change your networking settings
Set up a new connection or network
Set up a wireless, broadband, dial-up, ad hoc, or VPN connection; or set up a router or access point.
Connect to a network
Connect or reconnect to a wireless, wired, dial-up, or VPN network connection.

4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

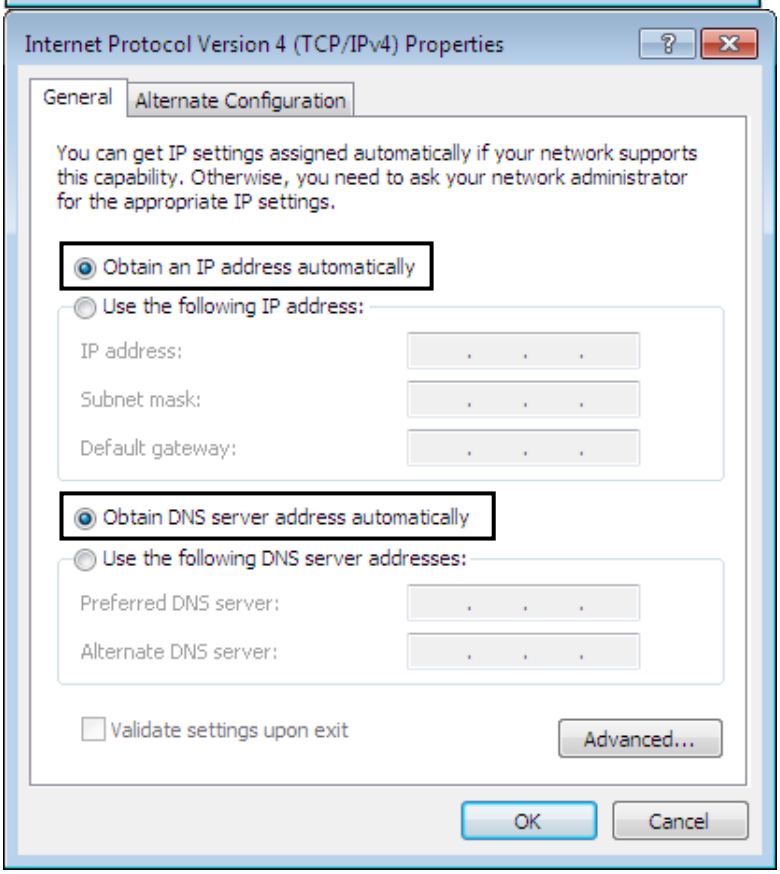


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



6. In the **TCP/IPv4 properties** window, select the **Obtain an IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

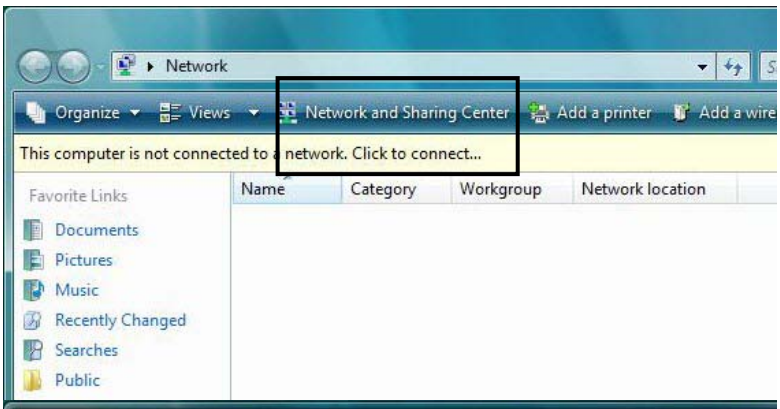
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Validate settings upon exit
Advanced...
OK
Cancel

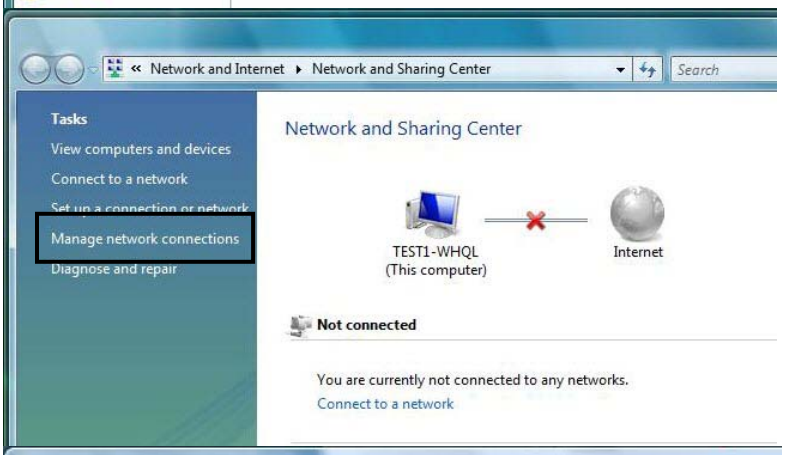
Configuring a PC in Windows Vista

1. Go to **Start**. Click on **Network**.

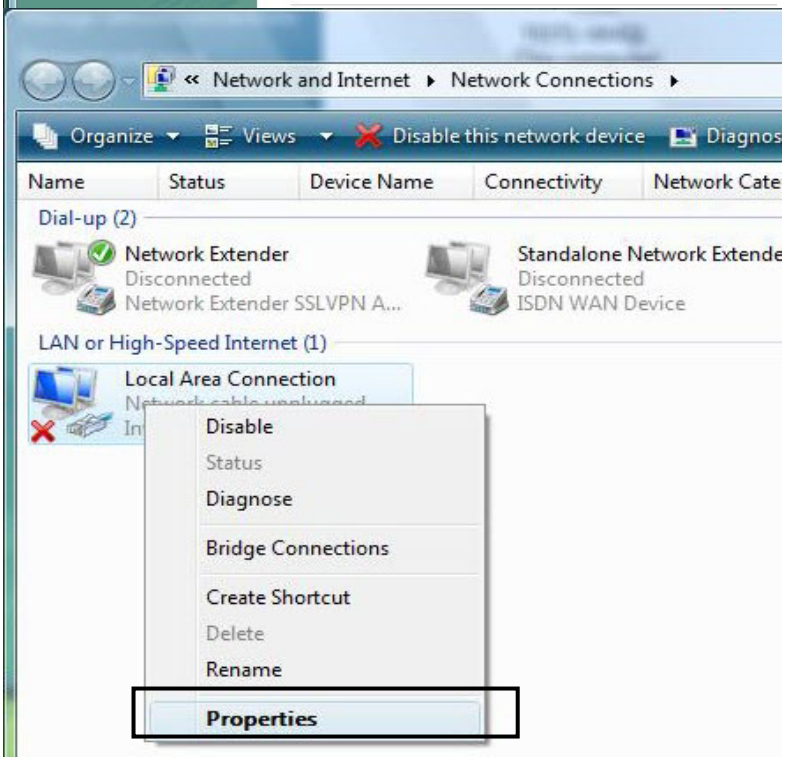
2. Then click on **Network and Sharing Center** at the top bar.



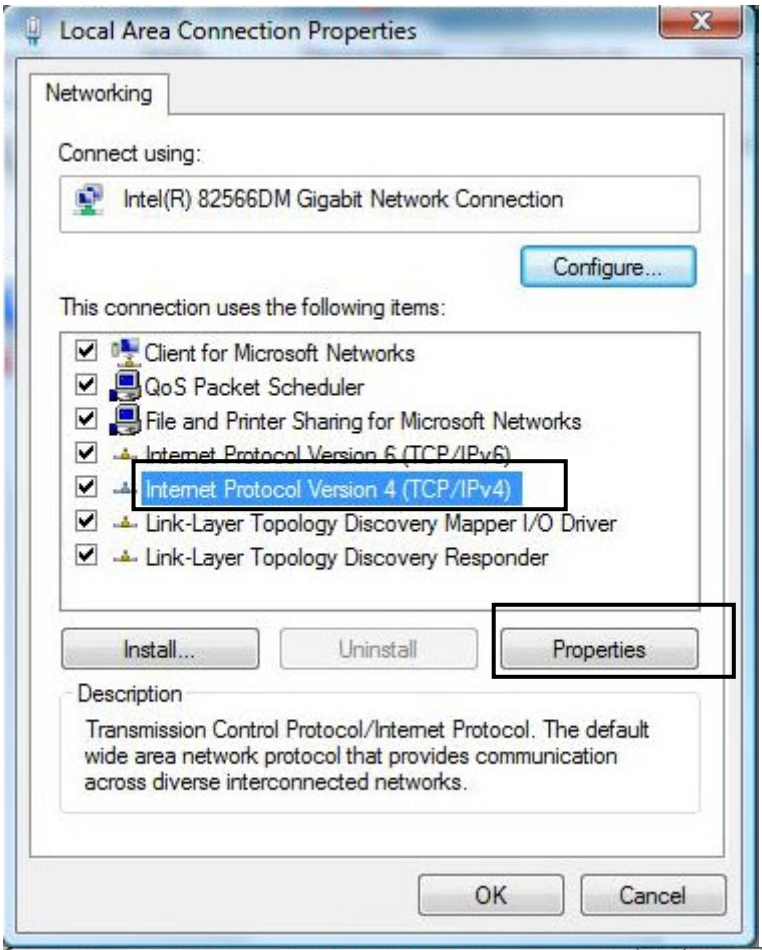
3. When the **Network and Sharing Center** window pops up, select and click on **Manage network connections** on the left window pane.



4. Select the **Local Area Connection**, and right click the icon to select **Properties**.

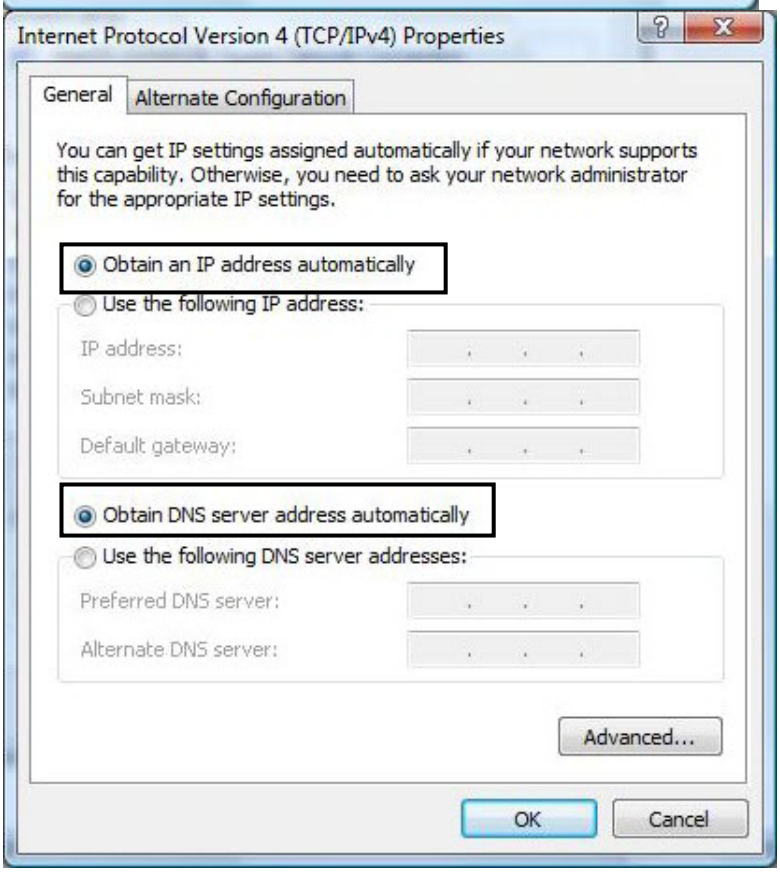


5. Select **Internet Protocol Version 4 (TCP/IPv4)** then click **Properties**.



6. In the **TCP/IPv4 properties** window, select the Obtain an **IP address automatically** and **Obtain DNS Server address automatically** radio buttons. Then click **OK** to exit the setting.

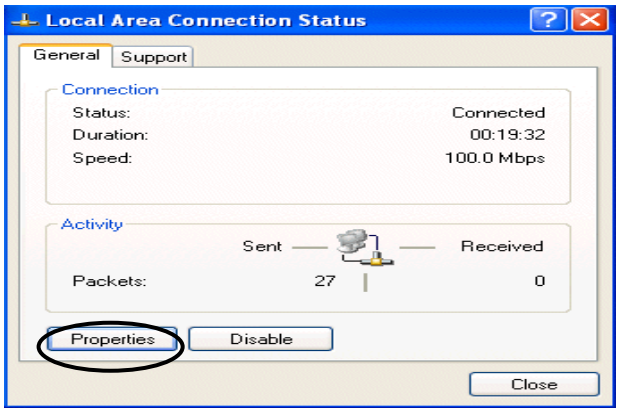
7. Click **OK** again in the **Local Area Connection Properties** window to apply the new configuration.


Internet Protocol Version 4 (TCP/IPv4) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

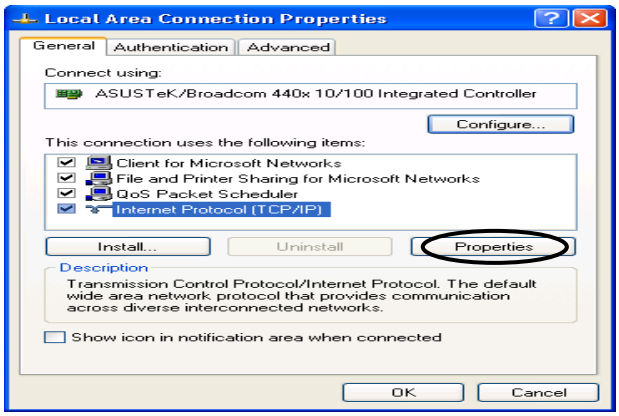
Configuring a PC in Windows XP

1. Go to **Start / Control Panel (in Classic View)**. In the Control Panel, double-click on **Network Connections**
2. Double-click **Local Area Connection**.

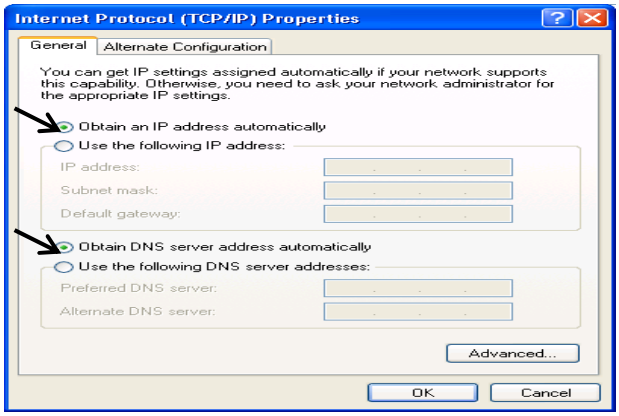
3. In the **Local Area Connection Status** window, click **Properties**.



4. Select **Internet Protocol (TCP/IP)** and click **Properties**.

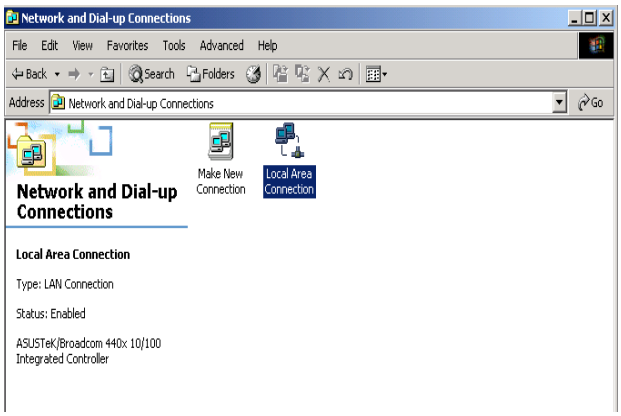


5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.
6. Click **OK** to finish the configuration.


Internet Protocol (TCP/IP) Properties
General Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

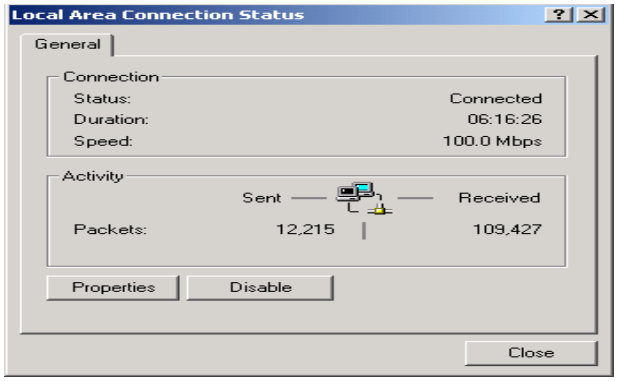
Configuring a PC in Windows 2000

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network and Dial-up Connections**.

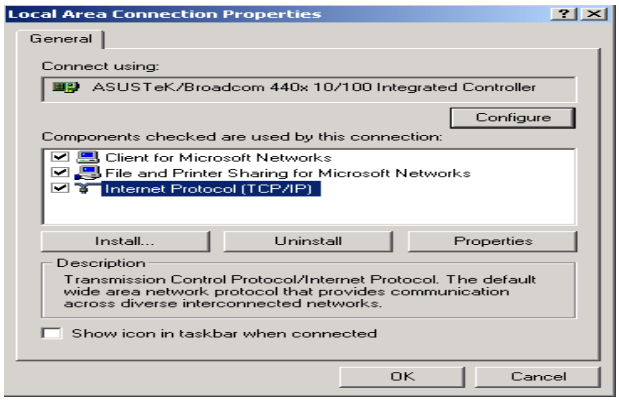


2. Double-click **Local Area Connection**.

3. In the **Local Area Connection Status** window click **Properties**.

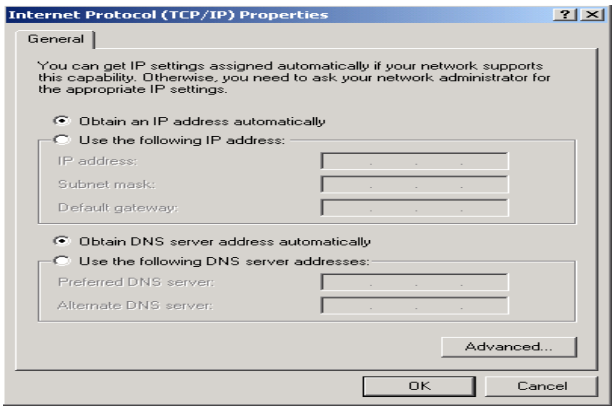


4. Select **Internet Protocol (TCP/IP)** and click **Properties**.


Local Area Connection Properties
General
Connect using:
ASUSTeK/Broadcom 440x 10/100 Integrated Controller
Configure
Components checked are used by this connection:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
Internet Protocol (TCP/IP)
Install... Uninstall Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in taskbar when connected
OK Cancel

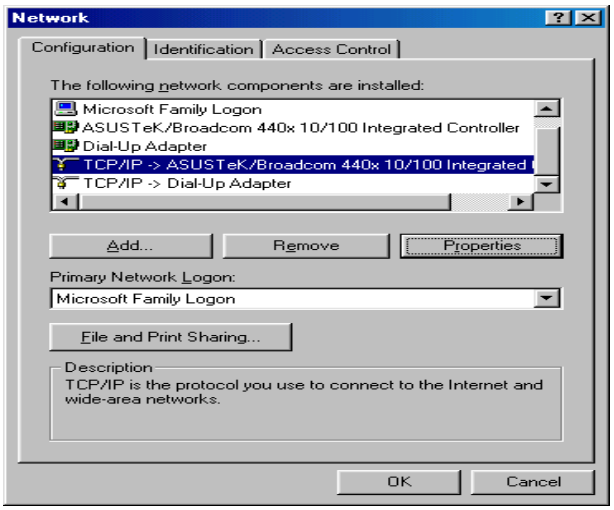
5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

6. Click **OK** to finish the configuration.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK Cancel

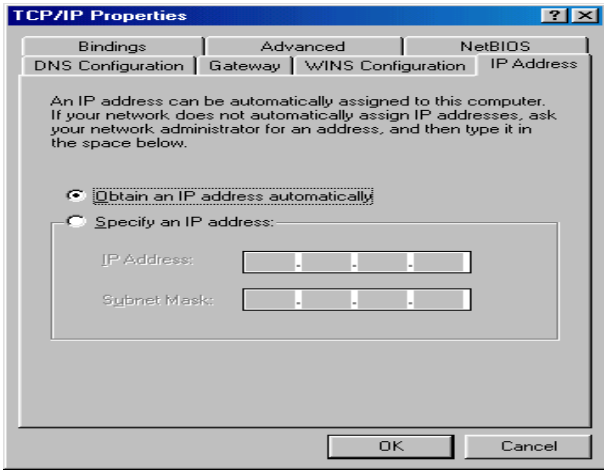
Configuring PC in Windows 98/Me

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Configuration** tab.



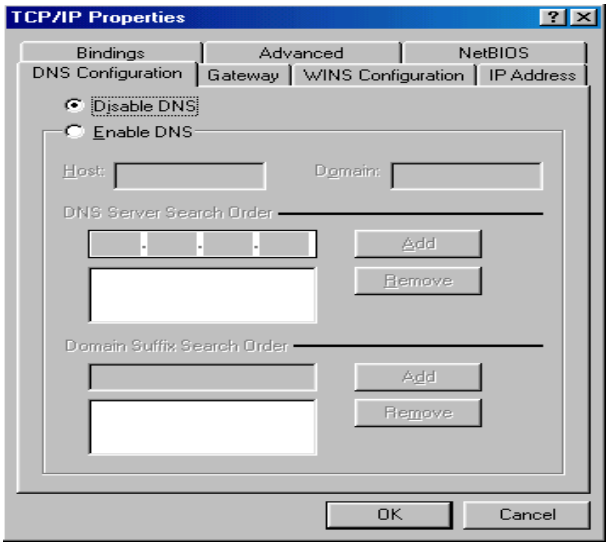
2. Select **TCP/IP ->NE2000 Compatible**, or the name of your Network Interface Card (NIC) in your PC.

3. Select the **Obtain an IP address automatically** radio button.


TCP/IP Properties
Bindings
Advanced
NetBIOS
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
Subnet Mask:
OK
Cancel

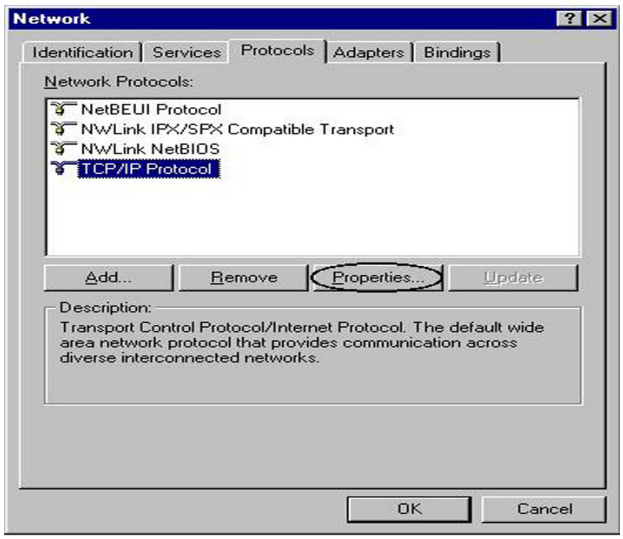
4. Then select the **DNS Configuration** tab.

5. Select the **Disable DNS** radio button and click **OK** to finish the configuration.



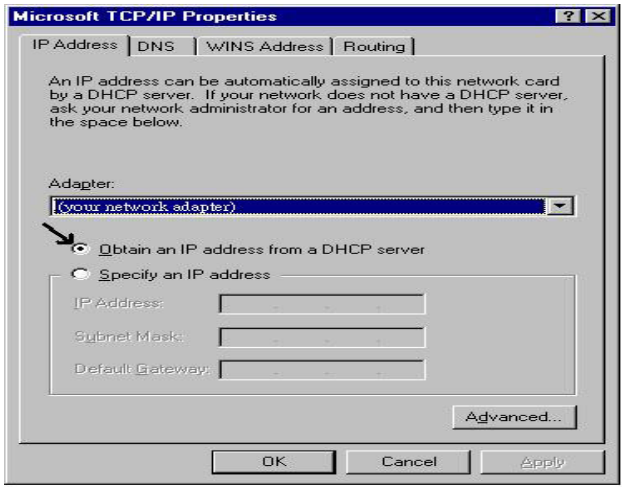
Configuring PC in Windows NT4.0

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Protocols** tab.



2. Select **TCP/IP Protocol** and click **Properties**.

3. Select the **Obtain an IP address from a DHCP server** radio button and click **OK**.


Microsoft TCP/IP Properties
IP Address
DNS
WINS Address
Routing
An IP address can be automatically assigned to this network card by a DHCP server. If your network does not have a DHCP server, ask your network administrator for an address, and then type it in the space below.
Adapter:
[your network adapter]
Obtain an IP address from a DHCP server
Specify an IP address
IP Address:
Subnet Mask:
Default Gateway:
Advanced...
OK
Cancel
Apply

3.2 Factory Default Settings

Before configuring the BiPAC 7300(N) router, you need to know the following default settings.

- **Web Interface: (Username and Password)**
  - Username: admin
  - Password: admin

  The default username and password are "**admin**" and "**admin**" respectively.

Attention

If you ever forget the username/password to login to the router, you may press the RESET button up to 6 seconds then release it to restore the factory default settings.

Caution: After pressing the RESET button for more than 6 seconds then release it, to be sure you power cycle the device again.

- **LAN Device IP Settings:**
  - IP Address: 192.168.1.254
  - Subnet Mask: 255.255.255.0

- **ISP setting in WAN site:**
  - PPPoE

- **DHCP Server:**
  - DHCP server is enabled.
  - Start IP Address: 192.168.1.100
  - IP pool counts: 100

3.3 LAN and WAN Port Addresses

The parameters of LAN and WAN ports are preset at the factory. The default values are shown below.

LAN Port		WAN Port
IP address	192.168.1.254	The PPPoE function is *enabled* to automatically get the WAN port configuration from the ISP.
Subnet Mask	255.255.255.0	
DHCP server function	Enabled in ports 1, 2, 3 and 4	
IP addresses for distribution to PCs	100 IP addresses continuing from 192.168.1.100 through 192.168.1.199	

3.4 Information from your ISP

Before configuring this device, you have to check with your ISP (Internet Service Provider) what kind of services are provided, such as PPPoE, PPPoA, MPoA or Pure Bridge.

Gather the information as illustrated in the following table and keep it for reference.

PPPoE	VPI/VCI, VC-based/LLC-based multiplexing, Username, Password, Service Name, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
PPPoA	VPI/VCI, VC-based/LLC-based multiplexing, Username, Password, and Domain Name System (DNS) IP address (it can be automatically assigned by your ISP when you connect or be set manually).
RFC1483 Bridged	VPI/VCI, VC-based/LLC-based multiplexing to use Bridged Mode.
RFC1483 Routed	VPI/VCI, VC-based/LLC-based multiplexing, IP address, Subnet mask, Gateway address, and Domain Name System (DNS) IP address (it is fixed IP address).

3.5 Configuring with your BiPAC 7300(N)

1. To configure this device, you must have IE 5.0 / Netscape 4.5 or above installed
2. You may configure the router for Internet access in two ways:

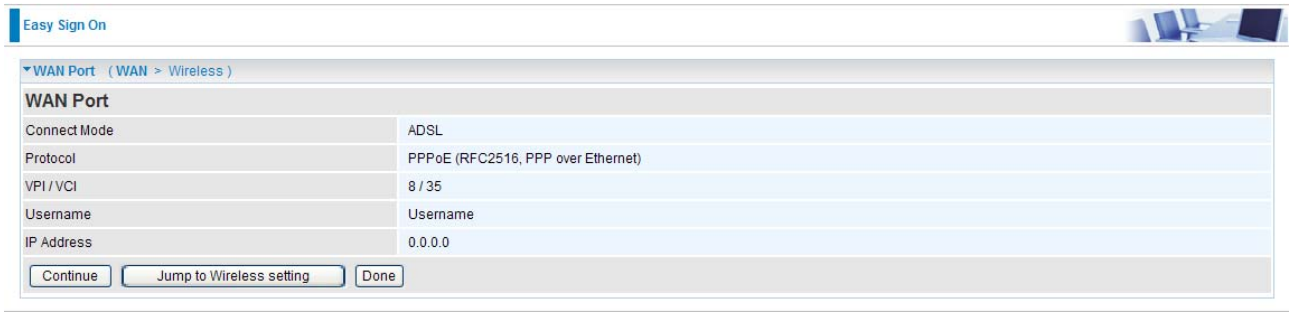
   (A) Easy Sign-On (EZSO) (B) Web Configuration

Easy Sign On

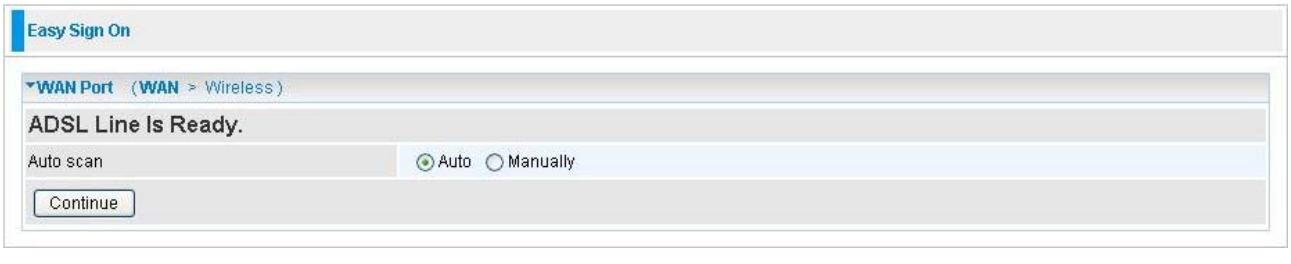
After setting up the router with appropriate cables plugged, proceed to load the internet browser to surf Internet, the EZSO WEB GUI will be popped up and request you to input some basic information you get from ISP. After this, you can surf Internet right away.

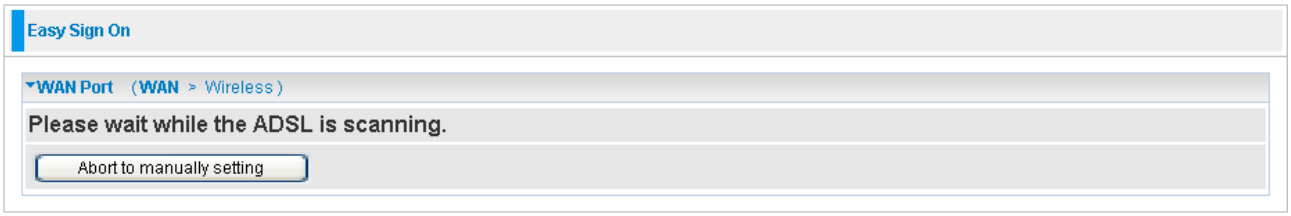
Follow the Easy Sign-On configuration wizard and it will guide you to complete the basic network configuration.

1. Click continue.

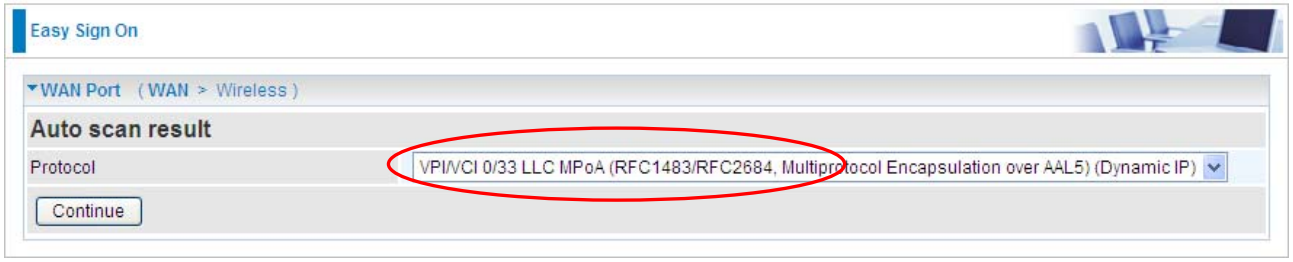


2. Choose “Auto” or “Manually” to scan ADSL information.

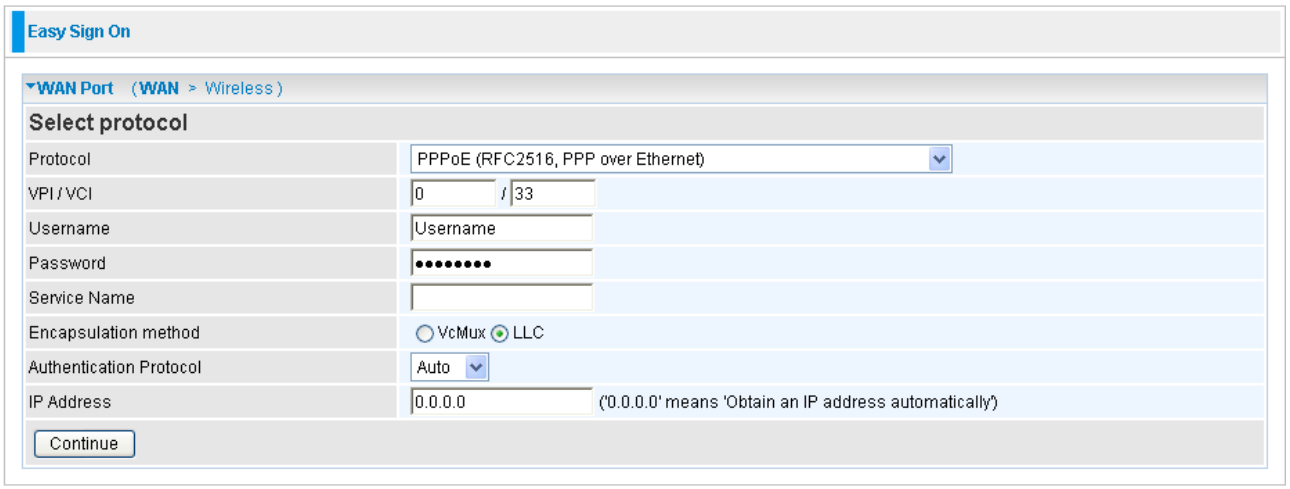




3. Show Auto scan result - Protocol information.


Easy Sign On
WAN Port (WAN > Wireless)
Auto scan result
Protocol
VPI/VCI 0/33 LLC MPoA (RFC1483/RFC2684, Multiprotocol Encapsulation over AAL5) (Dynamic IP)
Continue

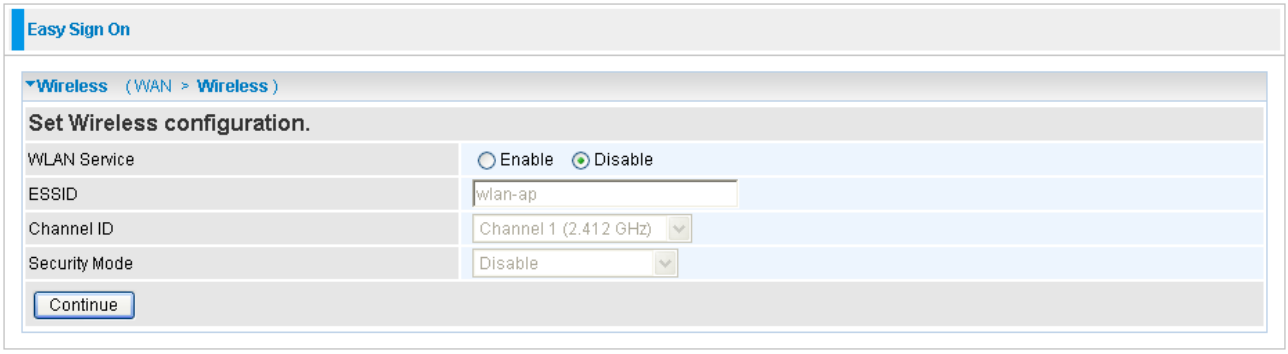
4. Please enter **"Username"** and **"Password"** as supplied by your ISP (Internet Service Provider) and click continue.



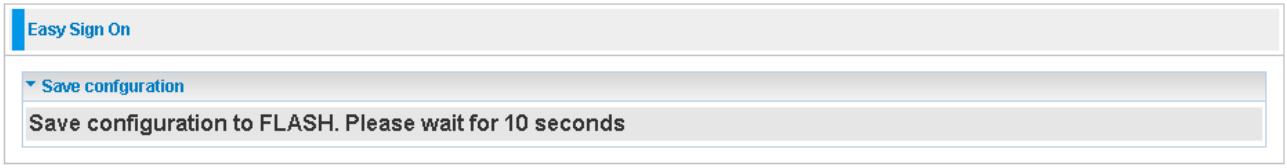
5. Wait for the device to be configured.

6. You've have completed the WAN port setup and now click "Next to Wireless" to proceed to the wireless configuration. **(Only available for 7300N)**

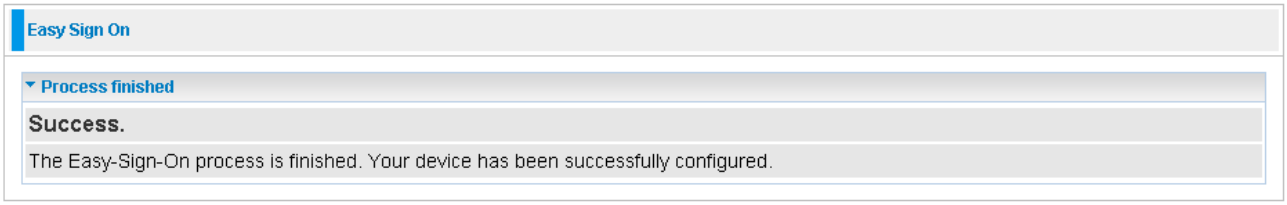
7. Please configure the Wireless LAN setting and click Continue.



8. Save Configuration.

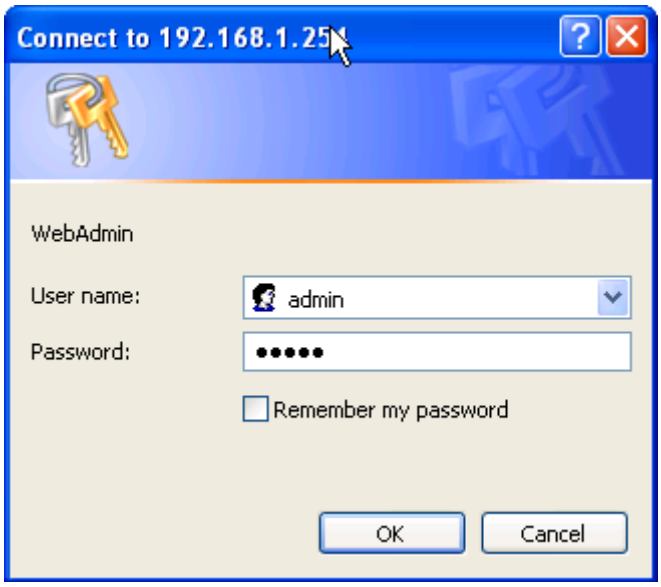


9. Congratulations!! You've completed the setup procedure and you are now ready to surf the Internet, enjoy.


Easy Sign On
Process finished
Success.
The Easy-Sign-On process is finished. Your device has been successfully configured.

Web Configuration

Open your web browser, enter the IP address of your router, which by default is **192.168.1.254**, and click "**Go**", a user name and password window prompt appears. The default username and password are **"admin"** and **"admin".**

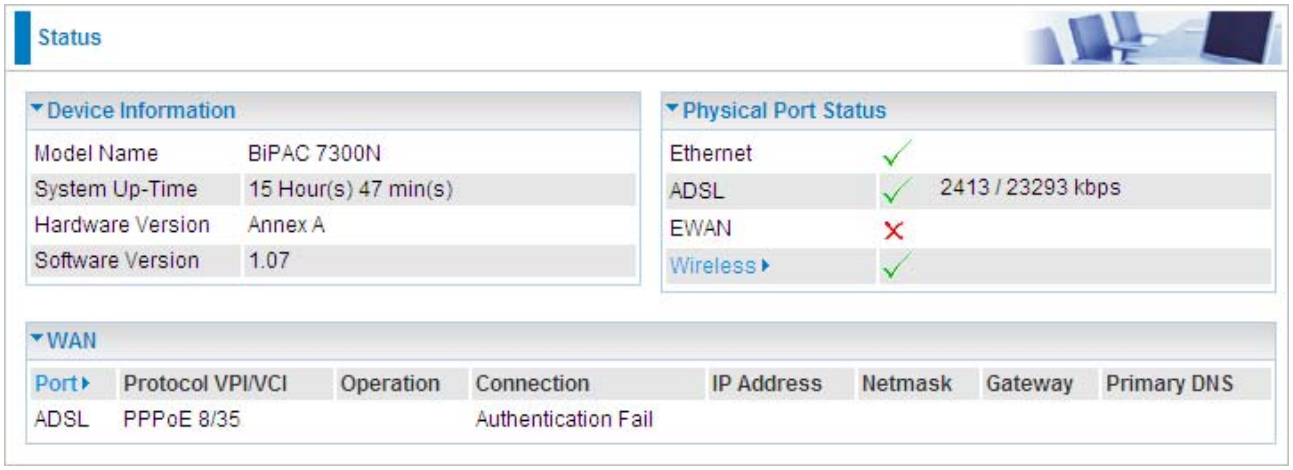


Congratulations! You have successfully logged on to your BiPAC 7300(N) Router!

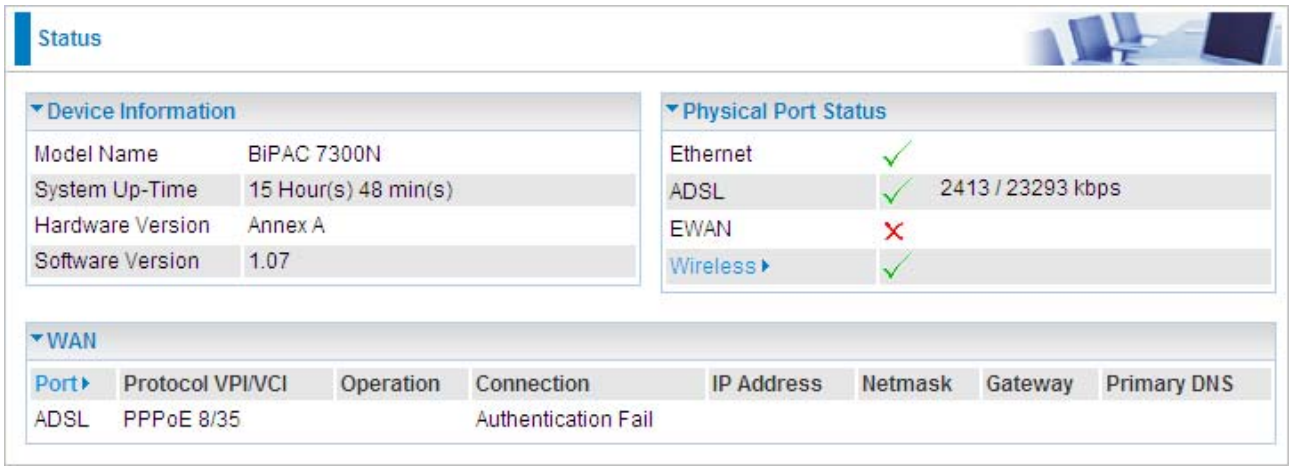
Chapter 4
Basic Configuration

Once you have logged on to your BiPAC 7300(N) Router via your web browser, you can begin to set it up according to your requirements. On the configuration homepage, the left navigation pane links you directly to the setup pages, which include:

- **Advanced** (Switch to Advanced Configuration mode)
- **Status**
- **Quick Start**
- **WAN**
- **WLAN (Only available for 7300N)**



4.1 Status



Device Information

- **Model Name:** Provide a name for the router for identification purposes.
- **System Up-Time:** Records system up-time.
- **Hardware Version:** Device version
- **Software Version:** Firmware version

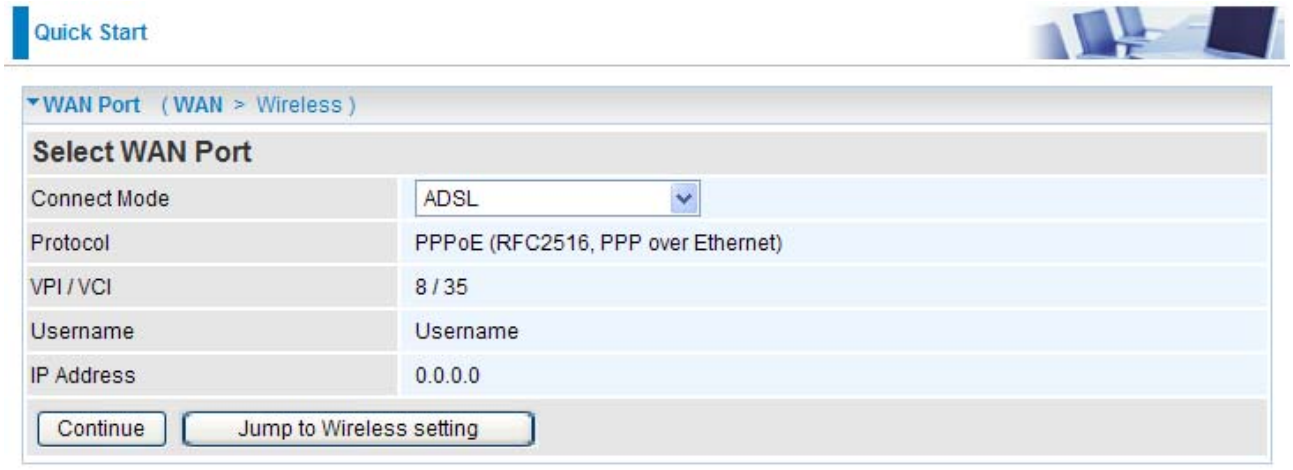
Port Status

- **Port Status:** User can look up to see if they are connected to Ethernet, ADSL, EWAN or Wireless.

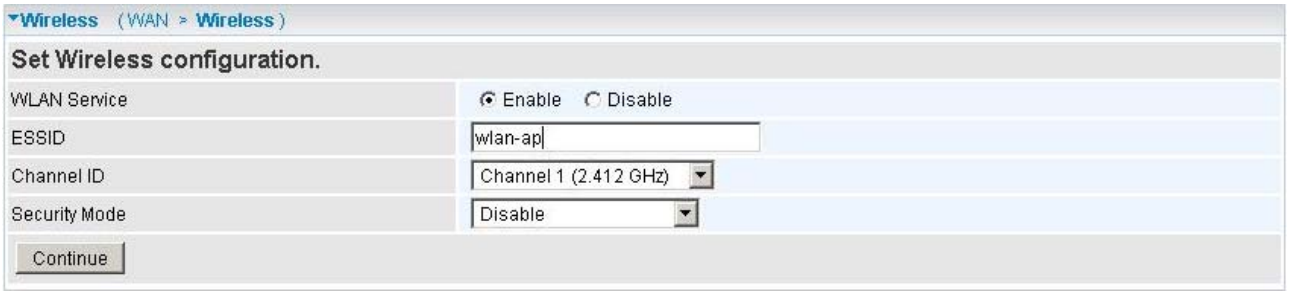
WAN

- **Port:** Name of the WAN connection.
- **Protocol VPI/VCI:** Virtual Path Identifier and Virtual Channel Identifier
- **Operation:** Current available operation.
- **Connection:** The current connection status.
- Net mask: WAN port IP subnet mask.
- Gateway: The IP address of the default gateway.
- **IP Address:** WAN port IP address.
- **Primary DNS:** The IP address of the primary DNS server.

4.2 Quick Start

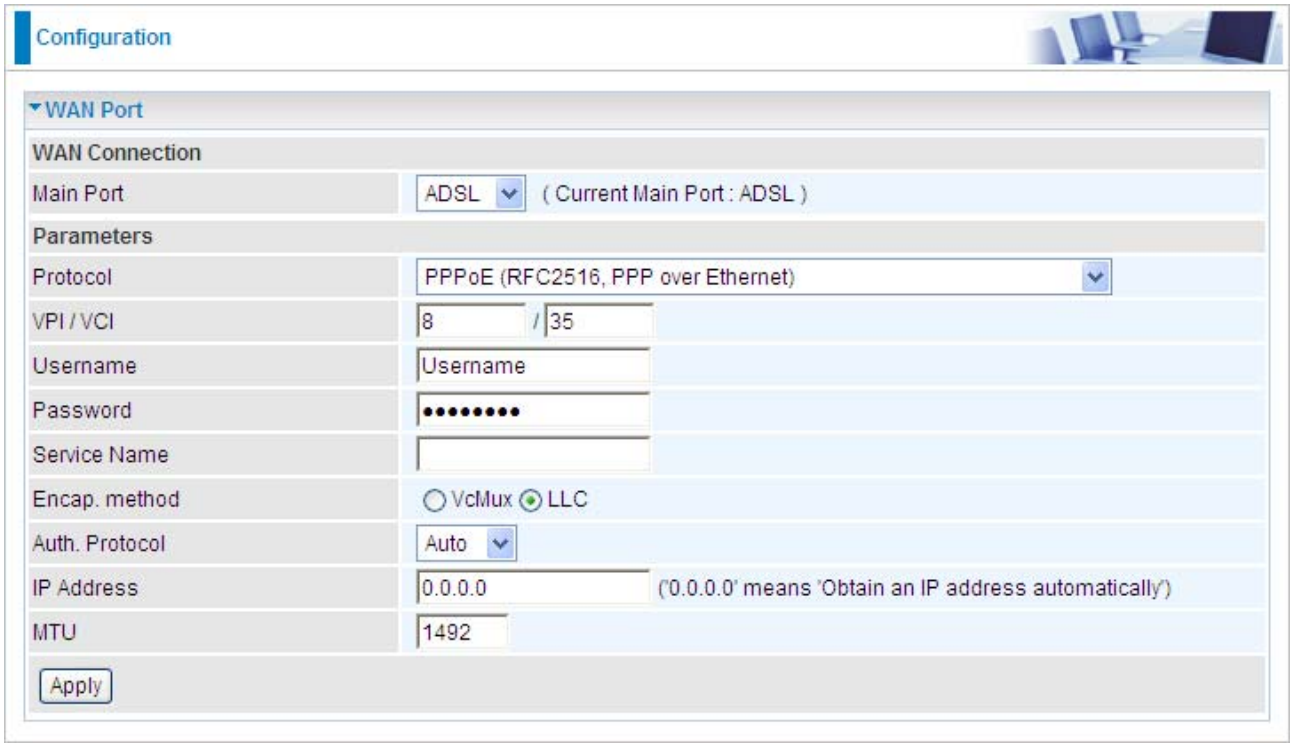


- Set Wireless configuration **(Only available for 7300N)**



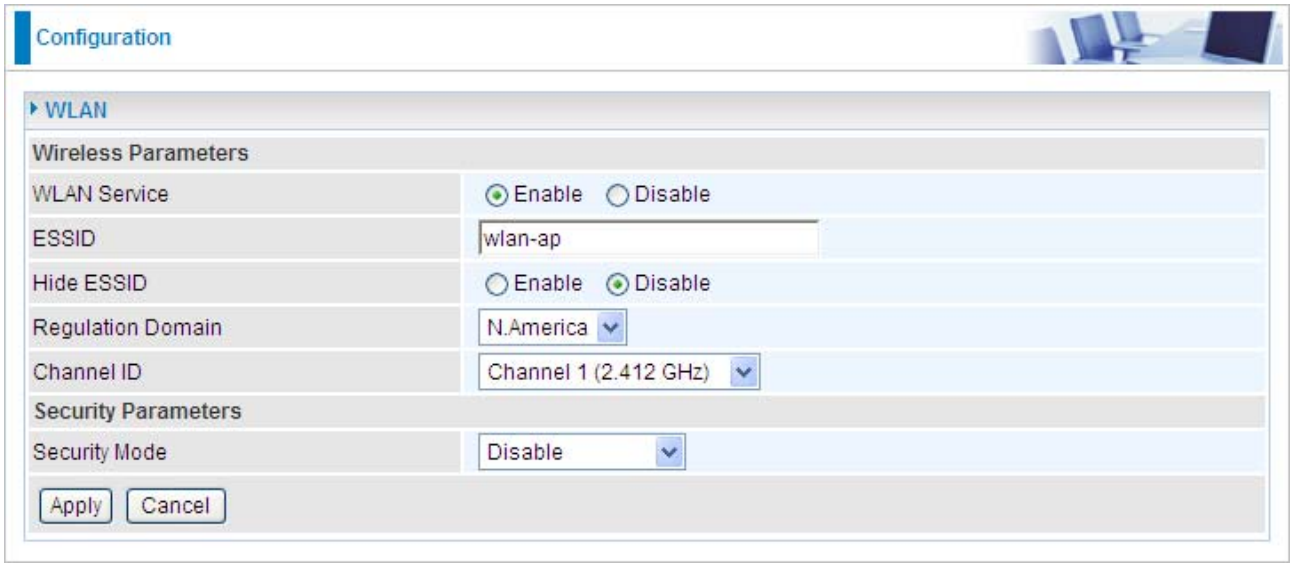
- **WLAN Service:** Default setting is set to **Enable**.
- **ESSID:** The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security purpose, change to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.
- **Channel ID:** Select the ID channel that you would like to use.
- **Security Mode:** You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

4.3 WAN



- **VPI/VCI:** Enter the VPI and VCI information provided by your ISP.
- **Username:** Enter the username provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.
- **Password:** Enter the password provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive)
- **Service Name:** This item is for identification purposes. If it is required, your ISP provides you the information. Maximum input is **15** alphanumeric characters.
- **Encap. method:** Select the encapsulation format, the default is LLC. Select the one provided by your ISP
- **Auth. Protocol:** Default is **Auto.** Your ISP advises on using **Chap** or **Pap.**
- **IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.
- **MTU:** Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that IP will attempt to send through the interface.

4.4 WLAN (Only available for 7300N)



WLAN Service: Default setting is set to **Enable**.

ESSID: The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.

Note: ESSID is case sensitive and must not excess 32 characters.

Hide ESSID: It is function in which transmits its ESSID to the air so that when wireless client searches for a network, router can then be discovered and recognized. Default setting is **Disable.**

⊙ **Enable:** Select Enable if you do not want broadcast your ESSID. When select Enable, no one will be able to locate the Access Point (AP) of your router.

⊙ **Disable:** When Disable is selected, you can allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

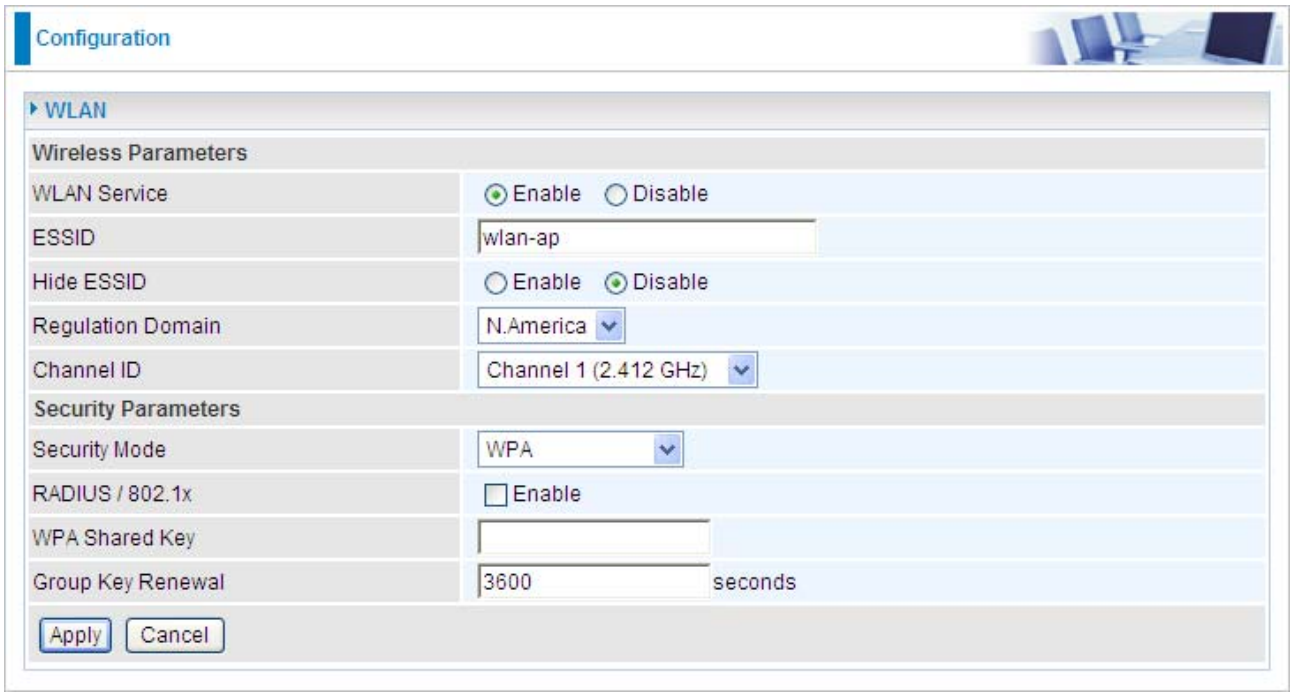
Regulation Domain: There are seven Regulation Domains for you to choose from, including **North America (N.America)**, **Europe**, **France**, etc. The Channel ID will be different based on this setting.

Channel ID: Select the ID channel that you would like to use.

Security Mode: You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

Security Parameters

WPA / WPA2



WLAN Service: Default setting is set to Enable. If you want to use wireless, you can select Enable.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

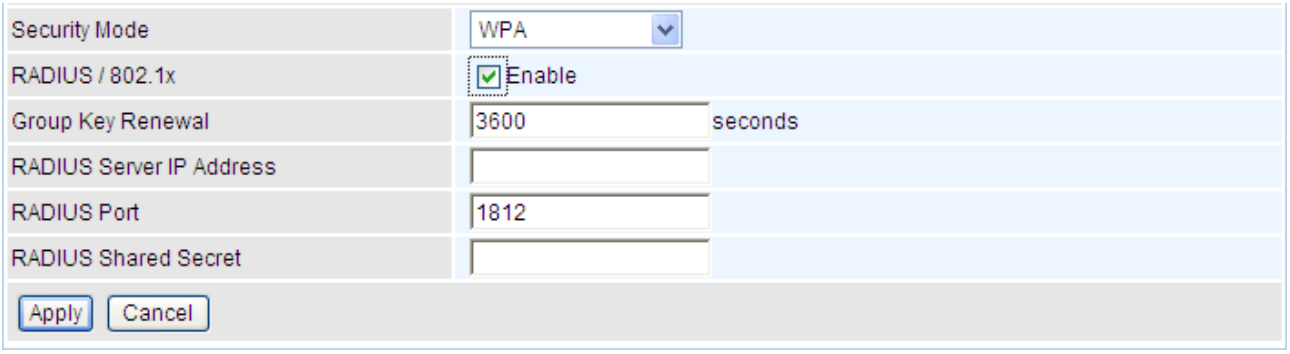
Channel ID: Select the channel ID that you would like to use.

Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is **Disable**.

RADIUS/802.1x: You can enable or disable the RADIUS service.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

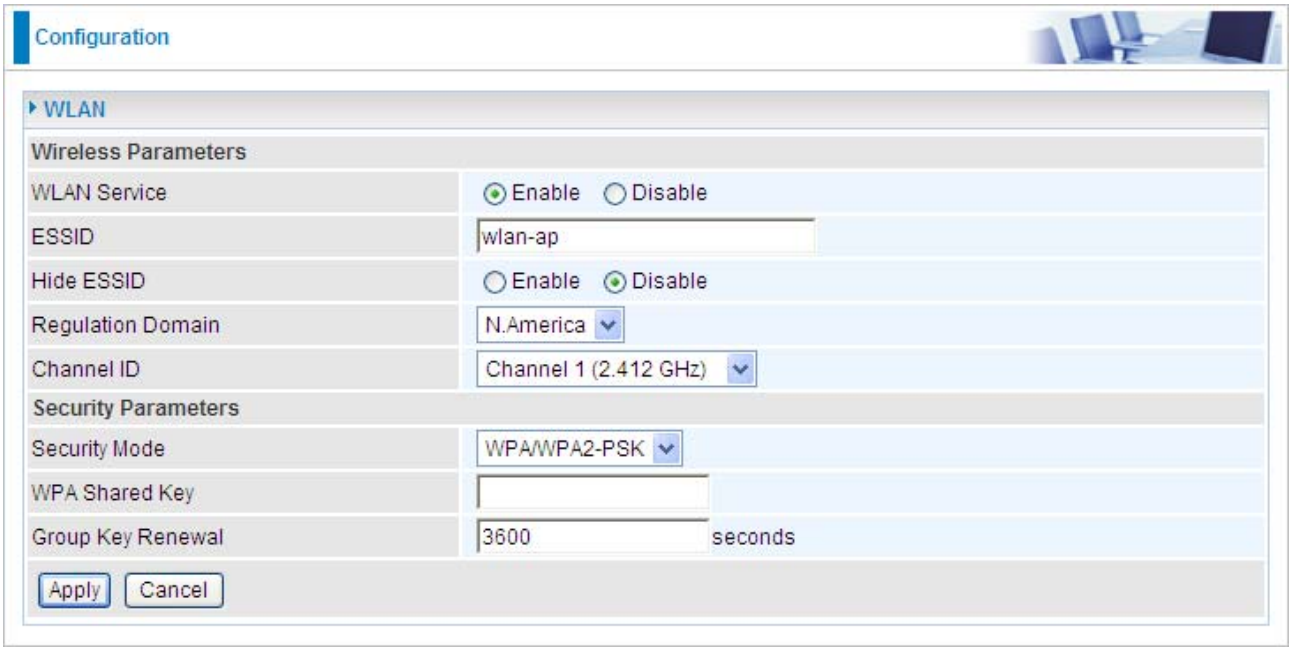
If you want to enable the RADIUS function, check Enable and then do the following settings.



- **RADIUS Server IP Address:** The IP address of RADIUS authentication server.
- **RADIUS Server Port:** The port number of RADIUS authentication server here. Default value is 1812.
- **RADIUS Shared Secret:** The password of RADIUS authentication server.

WPA / WPA2 Pre-Shared Key

WPA and WPA2 pre-shared keys are an authentication mechanism in which users provide some form of credentials to verify that they should be allowed access to a network. This requires a single password entered into each WLAN node (Access Points, Wireless Routers, client adapters, bridges). As long as the passwords match, a client will be granted access to a WLAN.



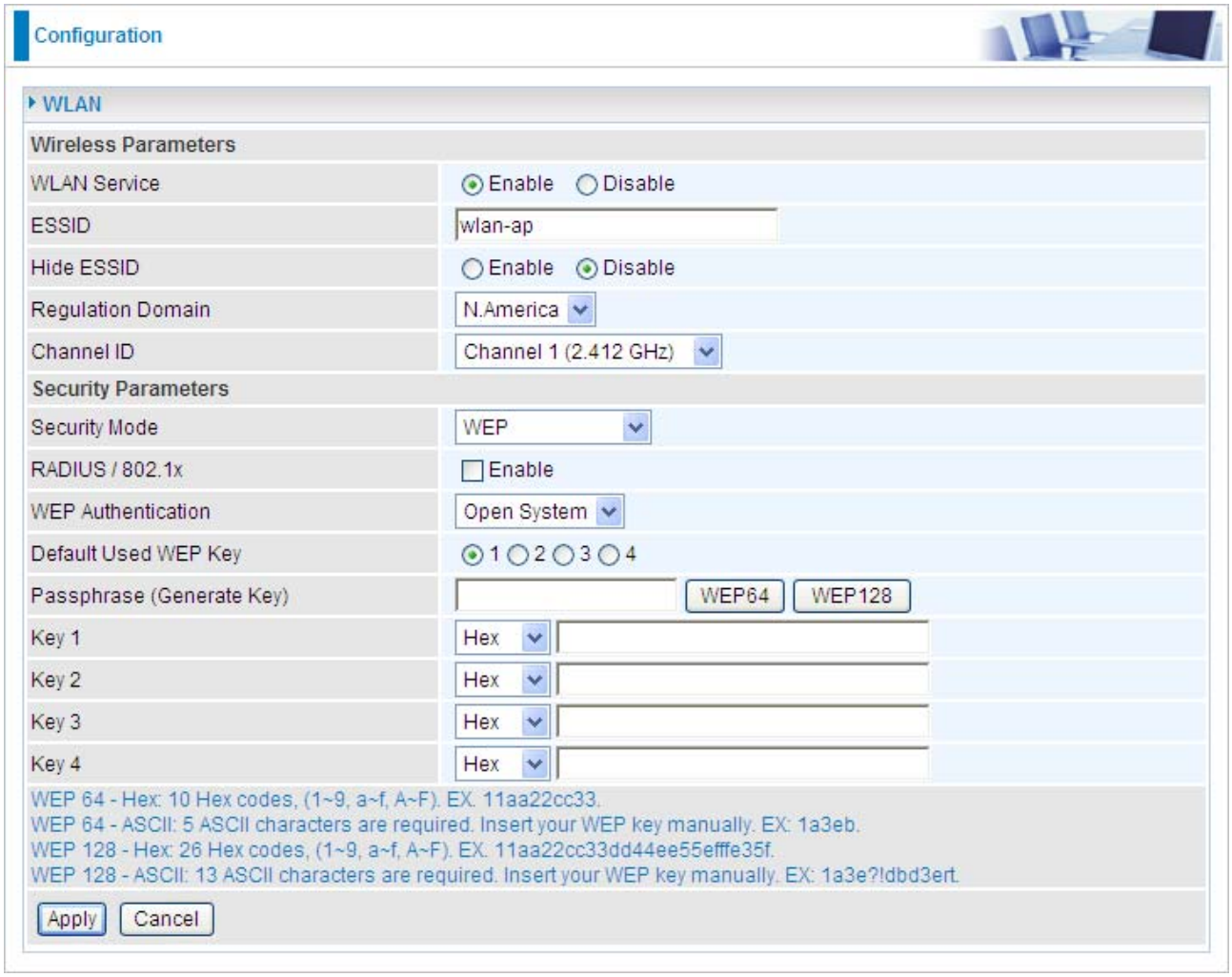
- **WLAN Service:** Default setting is set to Enable. If you want to use wireless, you can select Enable.
- **ESSID:** The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32

characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

- **Hide ESSID:** This function enables the router to become invisible on the network. Thus, any clients using the wireless setting to search for available or specific router on the network will not be able to discover the router whose Hide ESSID function is set to enabled. The default setting is disabled.
- **Regulation Domain:** There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.
- **Channel ID:** Select the channel ID that you would like to use.
- **Security Mode:** You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is **Disable**.
- **WPA Shared Key:** The key for network authentication. The input format is in character style and the key size should be in the range between 8 and 63 characters.
- **Group Key Renewal:** The period of renewal time for changing the security key between wireless client and Access Point (AP). This process is done automatically.

Note: Wireless performance may degrade if the selected channel ID is already being occupied by other AP(s).

WEP



WLAN Service: Default setting is set to Enable. If you do not have any wireless, select Disable.

ESSID: The ESSID is the unique name of a wireless access point (AP) used to distinguish one from another. For security propose, change to a unique ID name which is already built into the router wireless interface. It is case sensitive and must not exceed 32 characters. Make sure your wireless clients have exactly the ESSID as the device in order to connect to your network.

Hide ESSID: This function enables the router to become invisible on the network. Thus, any clients using the wireless setting to search for available or specific router on the network will not be able to discover the router whose Hide ESSID function is set to enabled. The default setting is disabled.

Regulation Domain: There are seven Regulation Domains for you to choose from, including North America (N.America), Europe, France, etc. The Channel ID will be different based on this setting.

Channel ID: Select the wireless connection channel ID that you would like to use.

Note: Wireless performance may degrade if the selected channel ID is already being occupied

Security Mode: You can disable or enable with WPA or WEP to protect wireless network. The default mode of wireless security is **Disable**.

RADIUS / 802.1x: You can disable or enable the RADIUS service.

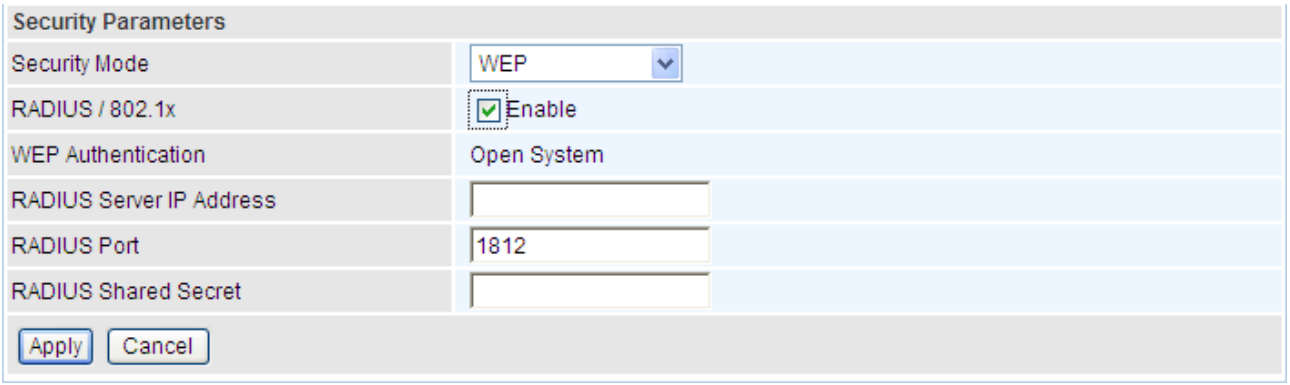
WEP Authentication: To prevent an unauthorized wireless station from accessing the data transmitted over the network, the router offers a secure data encryption, known as WEP. There are 3 options to select from: **Open System, Shared key** or **both**.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format can be either HEX style or ASCII format, 10 and 26 HEX codes or 5 and 13 ASCII codes are required for WEP64 and WEP128 respectively.

If you want to enable the RADIUS function, check **Enable** and then do the following settings.



RADIUS Server IP Address: The IP address of RADIUS authentication server.

RADIUS Server Port: The port number of RADIUS authentication server here. Default value is 1812.

RADIUS Shared Secret: The password of RADIUS authentication server.

Click Apply to confirm the settings.

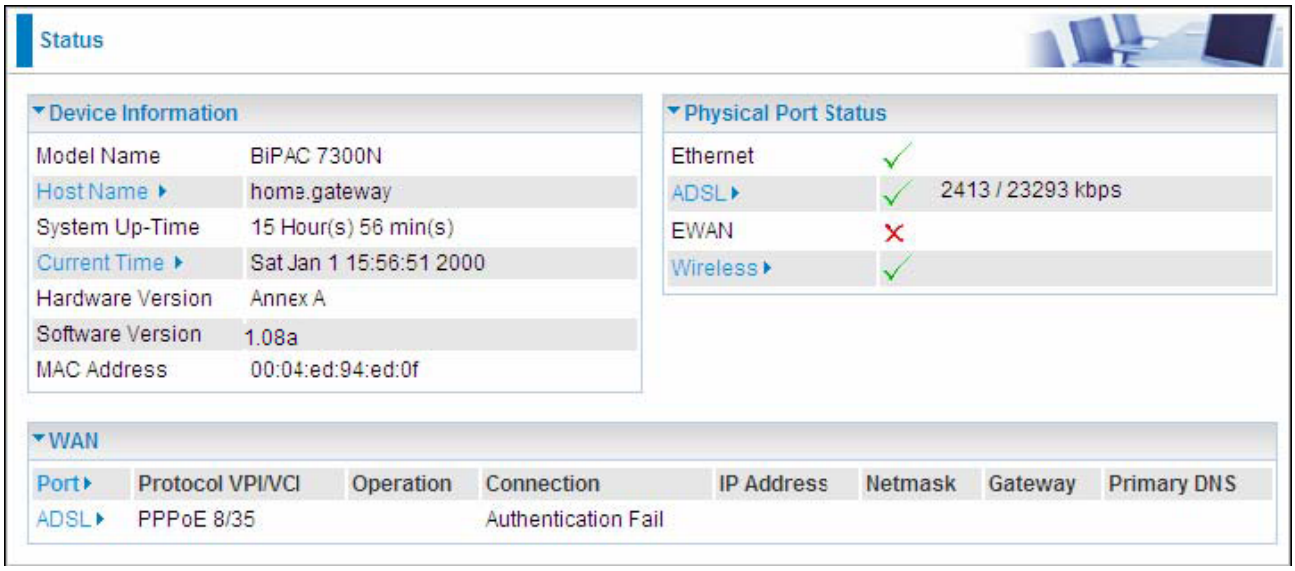
Chapter 5
Advanced Configuration

Once you have logged on to your BiPAC 7300(N) Router via your web browser, you can begin to set it up according to your requirements. On the configuration homepage, the left navigation pane links you directly to the setup pages, which include:

- **Basic** (Switch to Basic Configuration Mode)
- **Status** (ADSL Status, ARP Table, DHCP Table, System Log, Firewall Log, UPnP Portmap)
- **Quick Start**
- **Configuration** (LAN, WAN, System, Firewall, QoS, Virtual Server, Wake on LAN, Time Schedule and Advanced)

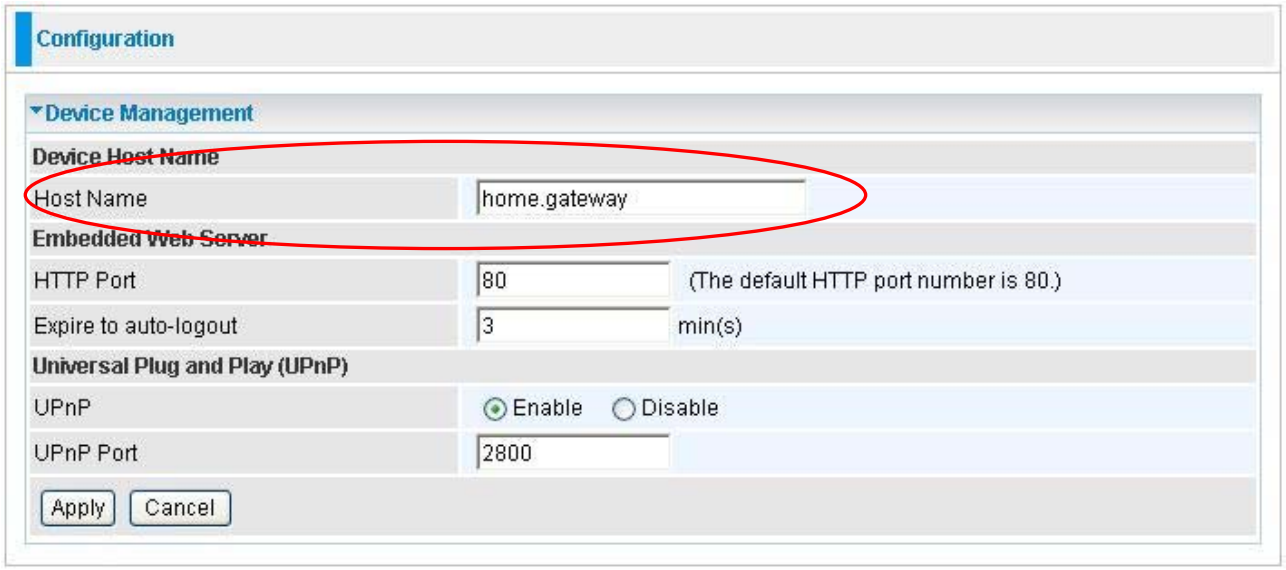
The following sections provide an overview of the settings available for configuring your router.

5.1 Status



Device Information

- **Host Name:** Provide a name for the router for identification purposes. Host Name lets you change the router name.



- **System Up-Time:** Records system up-time.
- **Current time:** Set the current time. See the Time Zone section for more information.
- **Hardware Version:** Device version.
- **Software Version:** Firmware version.
- **MAC Address:** The LAN MAC address.

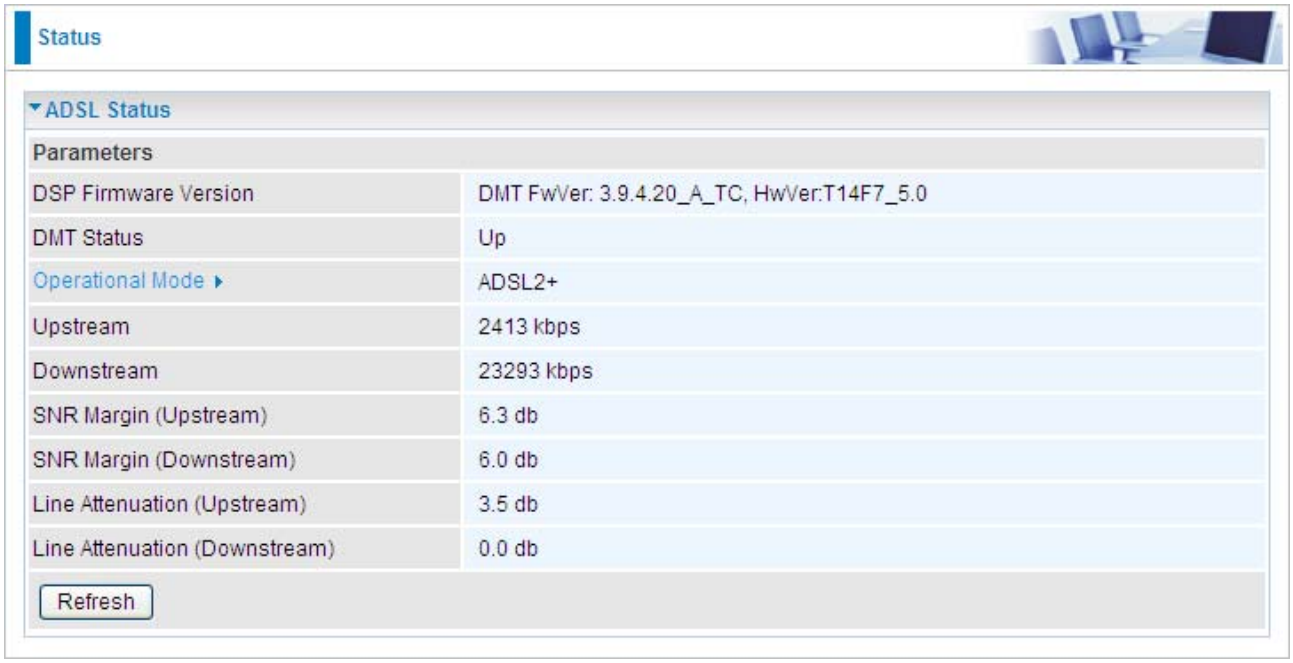
WAN

- **Port:** Name of the WAN connection.
- **Protocol VPI/VCI:** Virtual Path Identifier and Virtual Channel Identifier
- **Operation:** Current available operation.
- **Connection:** The current connection status.
- **IP Address:** WAN port IP address.
- **Net mask:** WAN port IP subnet mask.
- **Gateway:** The IP address of the default gateway.
- **Primary DNS**: The IP address of the primary DNS server.

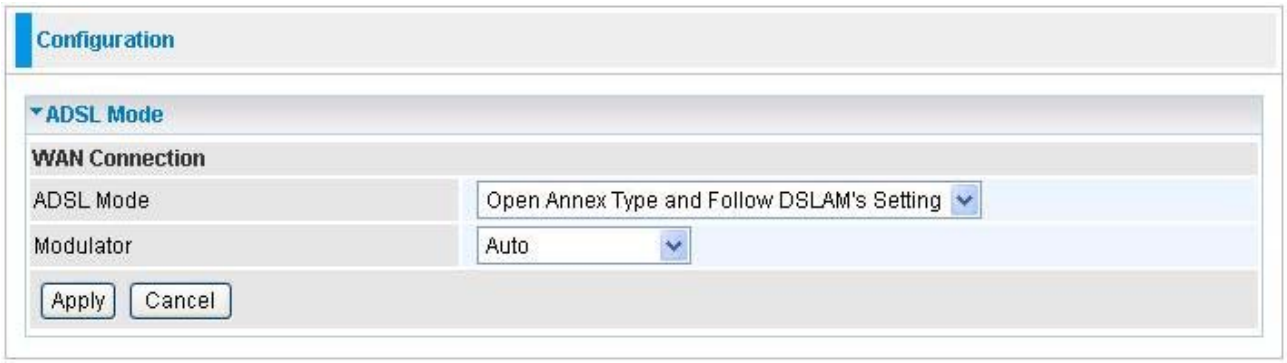
Port Status

- **Port Status:** User can look up to see if they are connected to Ethernet, ADSL, EWAN or Wireless.

5.1.1 ADSL Status



- **DSP Firmware Version:** DSP code version
- **DMT Status:** Current DMT Status
- **Operational Mode:** To show the state when user select “AUTO” on connect mode.
- **Upstream:** Upstream rate.
- **Downstream:** Downstream rate.
- **SNR Margin (Upstream):** This is noise margin in upstream.
- **SNR Margin (Downstream):** This is noise margin in downstream.
- **Line Attenuation (Upstream):** This is attenuation of signal in upstream.
- **Line Attenuation (Downstream):** This is attenuation of signal in downstream.

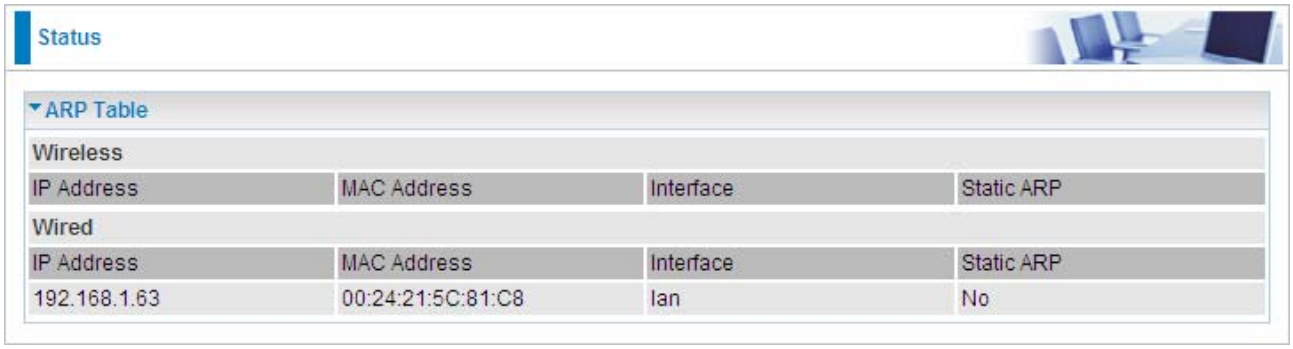


- **ADSL Mode:** There are four modes “**Open Annex Type and Follow DSLAM’s Setting**”, ”**Annex A**”, ”**Annex L**”, ”**Annex M**” and **“Annex J”** that user can select for this connection.
- **Modulator:** There are seven modes “**AUTO**”, ”**ADSL**

Multimode”,”**ADSL2**”, ”**ADSL2+**”,”**G.Lite**”, “**T1.413**” and “**G.DMT**” that user can select for this connection.

5.1.2 ARP Table

This section displays the router's ARP (Address Resolution Protocol) Table, which shows the mapping of Internet (IP) addresses to Ethernet (MAC) addresses. This is useful as a quick way of determining the MAC address of the network interface of your PCs to use with the router's **Firewall – MAC Address Filter** function. See the Firewall section of this manual for more information on this feature.



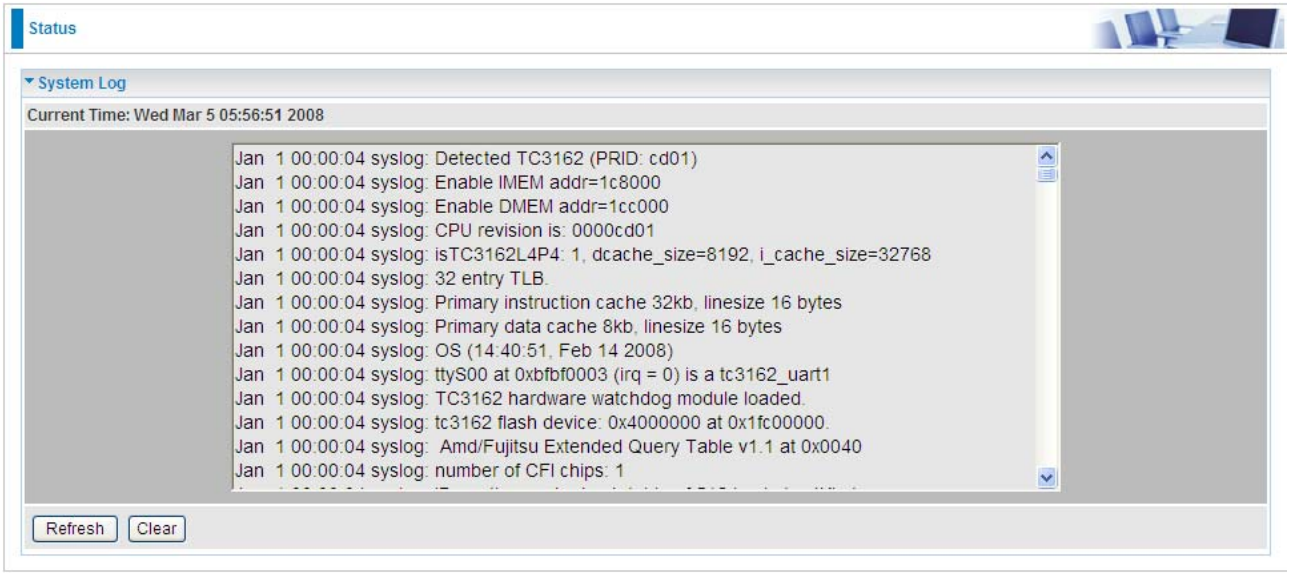
- **IP Address:** It is IP Address of internal host that join this network.
- **MAC Address:** The MAC address of internal host.
- **Interface:** The interface name (on the router) that this IP address connects to.
- **Static ARP:** Shows the status of static ARP.

5.1.3 DHCP Table

- **IP Address:** The current corresponding DHCP-assigned dynamic IP address of the device.
- **MAC Address:** The MAC Address of internal dhcp client host.
- **Client Host Name:** The Host Name of internal dhcp client.
- **Register Information:** Register time information.

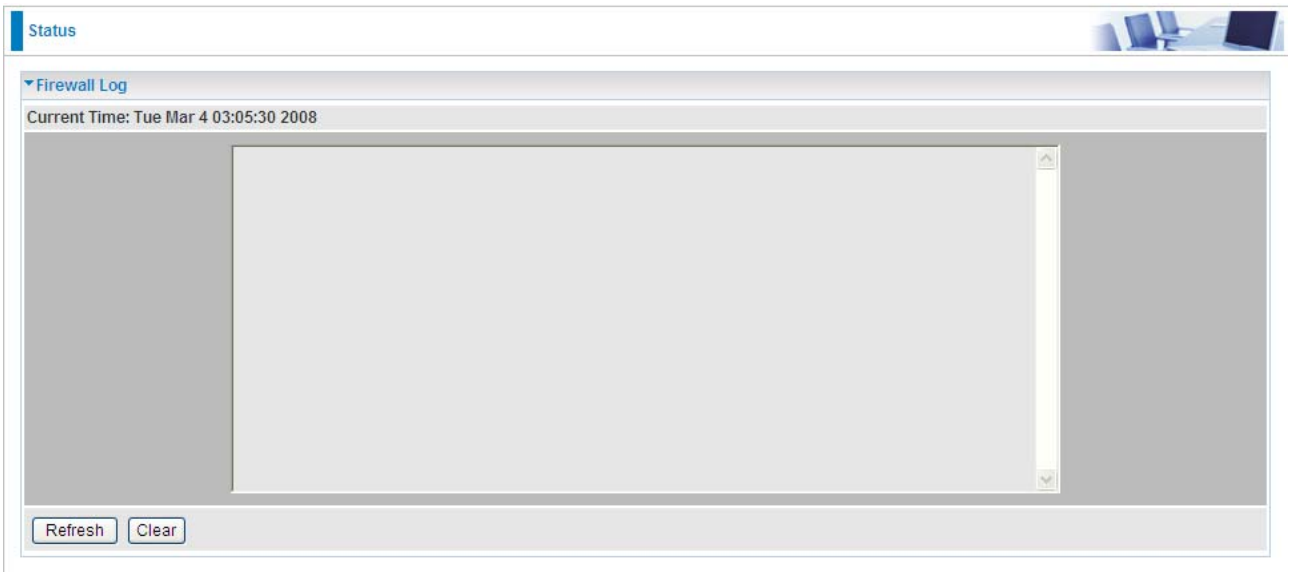
5.1.4 System Log

Display system logs accumulated up to the present time. You can trace historical information with this function.


Status
System Log
Current Time: Wed Mar 5 05:56:51 2008
Jan 1 00:00:04 syslog: Detected TC3162 (PRID: cd01)
Jan 1 00:00:04 syslog: Enable IMEM addr=1c8000
Jan 1 00:00:04 syslog: Enable DMEM addr=1cc000
Jan 1 00:00:04 syslog: CPU revision is: 0000cd01
Jan 1 00:00:04 syslog: isTC3162L4P4: 1, dcache_size=8192, i_cache_size=32768
Jan 1 00:00:04 syslog: 32 entry TLB.
Jan 1 00:00:04 syslog: Primary instruction cache 32kb, linesize 16 bytes
Jan 1 00:00:04 syslog: Primary data cache 8kb, linesize 16 bytes
Jan 1 00:00:04 syslog: OS (14:40:51, Feb 14 2008)
Jan 1 00:00:04 syslog: ttyS00 at 0xbfbf0003 (irq = 0) is a tc3162_uart1
Jan 1 00:00:04 syslog: TC3162 hardware watchdog module loaded.
Jan 1 00:00:04 syslog: tc3162 flash device: 0x4000000 at 0x1fc00000.
Jan 1 00:00:04 syslog: Amd/Fujitsu Extended Query Table v1.1 at 0x0040
Jan 1 00:00:04 syslog: number of CFI chips: 1
Refresh
Clear

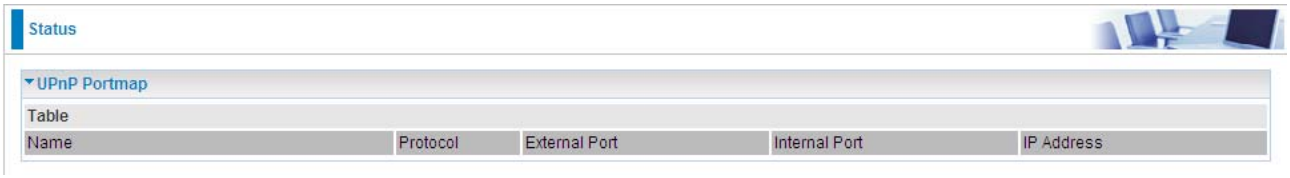
5.1.5 Firewall Log

Firewall Log displays log information of any unexpected action with your firewall settings. This page displays the router's Firewall Log entries. The log shows log entries when you have enabled Intrusion Detection or Block WAN PING in the **Configuration – Firewall** section of the interface. Please see the **Firewall** section of this manual for more details on how to enable Firewall logging.



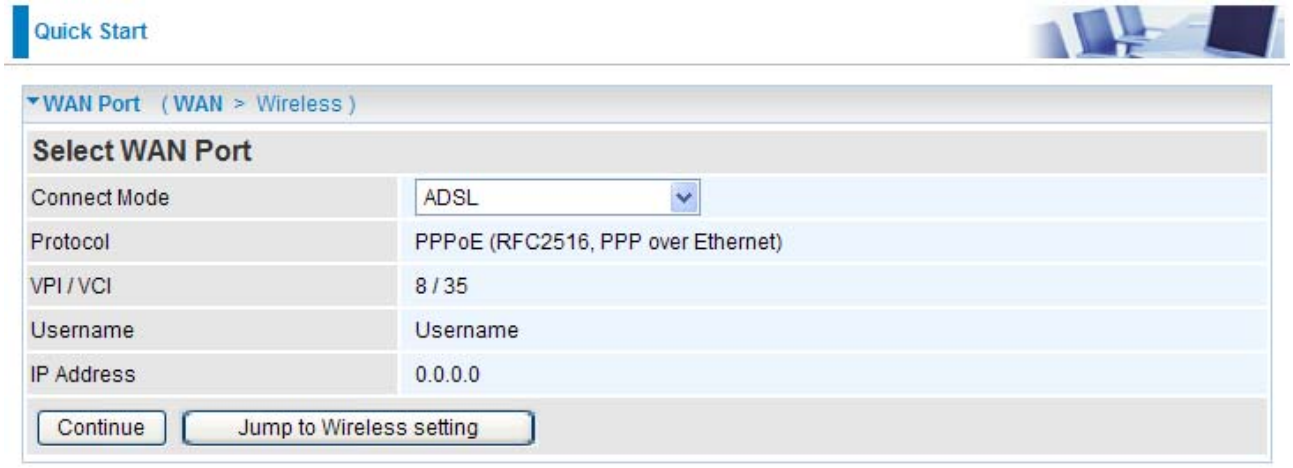
5.1.6 UPnP Portmap

The section lists all port-mapping established using UPnP (Universal Plug and Play). Please see the Advanced section of this manual for more details on UPnP and the router's UPnP configuration options.



5.2 Quick Start

ADSL



- **Connect mode:** ADSL
- **Protocol:** The current ATM protocol in the device
- **VPI / VCI:** The current value of VPI / VCI in the device
- **IP address:** To show current value of IP address in the device.

EWAN

Click on **Continue** to choose the Protocol to connect with EWAN or click **Jump to Wireless Setting** to use Protocol: Obtain an IP Address Automatically to connect and setup wireless settings at the same time.

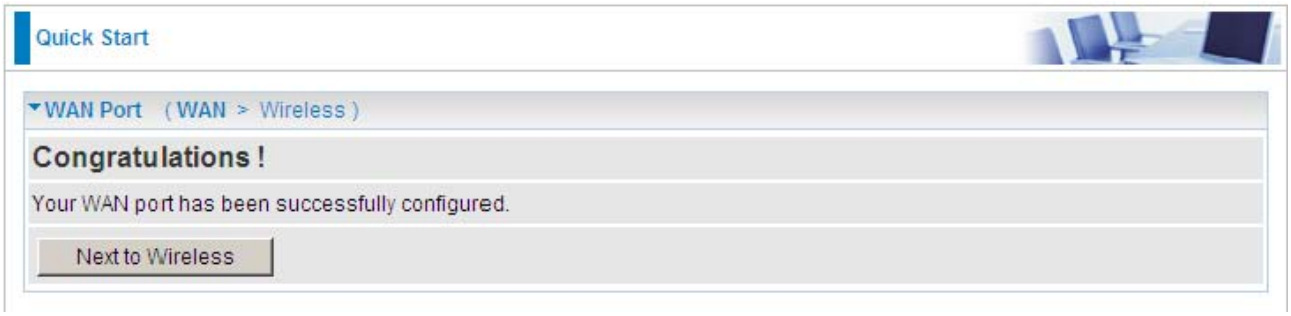
Obtain an IP Address Automatically

When connecting to the ISP, BiPAC 7300(N) also functions as a DHCP client. BiPAC 7300(N) can automatically obtain an IP address, subnet mask, gateway address, and DNS server addresses if the ISP assigns this information via DHCP.

Protocol: The current ATM protocol in the device

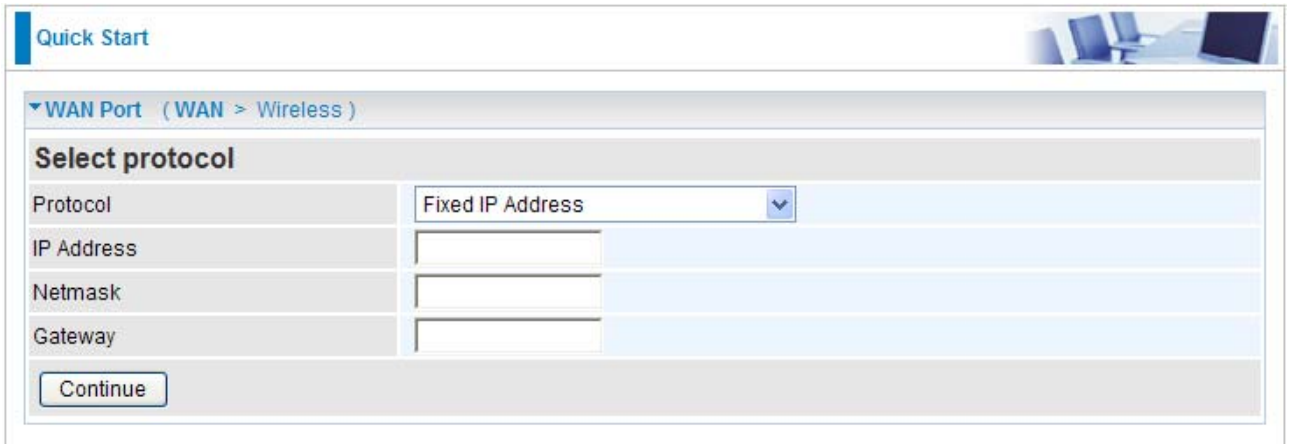
Click on the **Continue** button and wait for your connection to be connected.

If connection is successful the following image will be shown.



Fixed IP Address

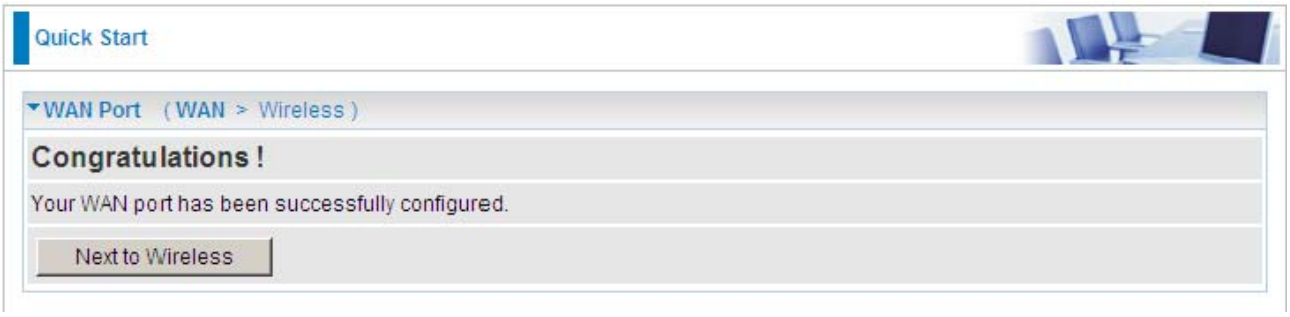
Select this option to set static IP information. You will need to enter in the Connection type, IP address, Netmask, and gateway address, provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which is four IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format.



- **Protocol:** The current ATM protocol in the device
- **IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.
- **Netmask:** The default is 0.0.0.0. User can change it to other such as 255.255.255.0.Type the subnet mask assigned to you by your ISP (if given).
- **Gateway:** You must specify a gateway IP address (supplied by your ISP)

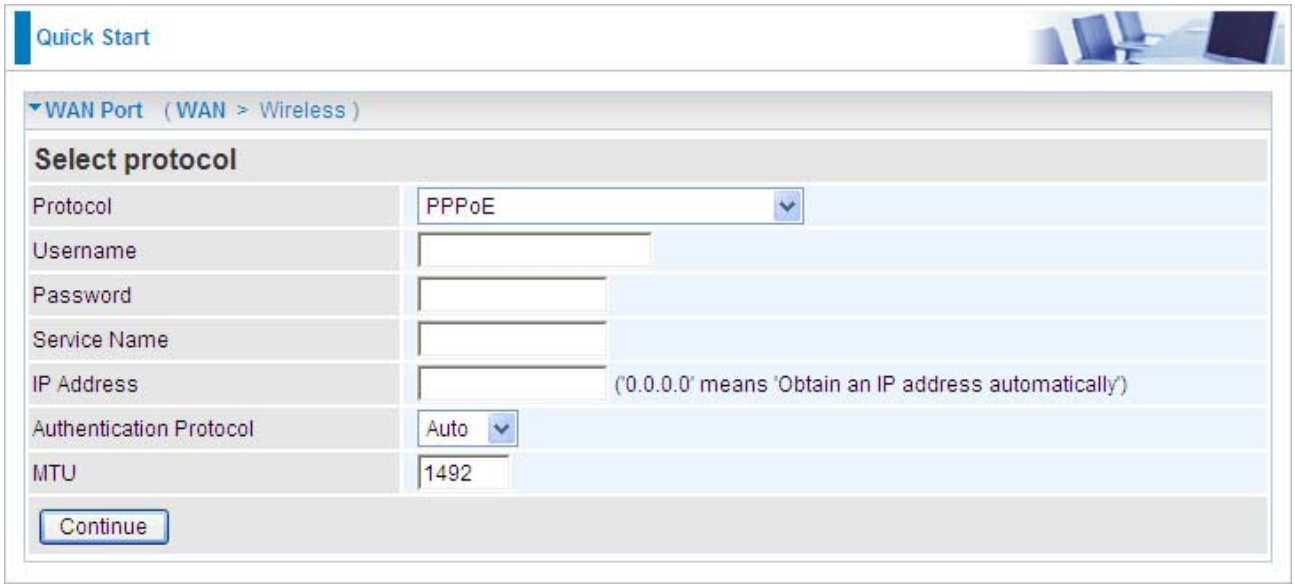
Click on the **Continue** button and wait for your connection to be connected.

If connection is successful the following image will be shown.



PPPoE

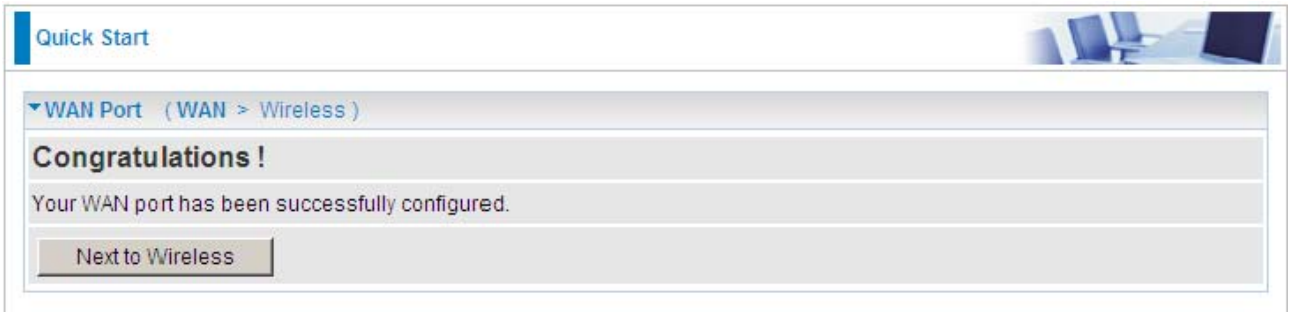
PPPoE (PPP over Ethernet) provides access control in a manner similar to dial-up services using PPP.



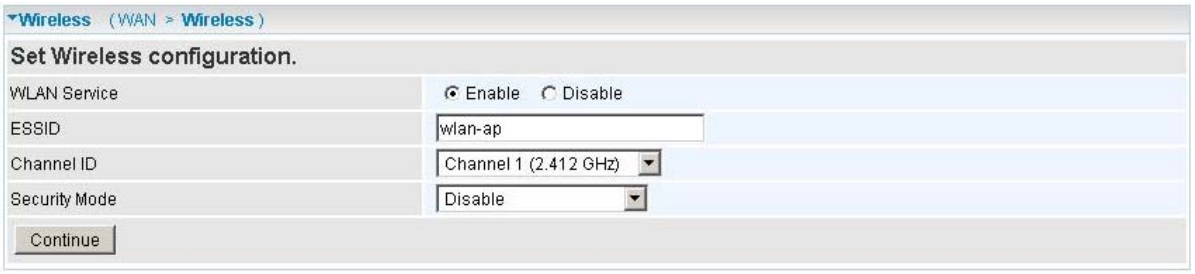
- **Protocol:** The current ATM protocol in the device
- **Username:** Enter the username provided by your ISP. You can input up to 128 alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.
- **Password:** Enter the password provided by your ISP. You can input up to 128 alphanumeric characters (case sensitive).
- **Service Name:** Enter a name for this connection.
- **IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.
- **Auth. Protocol:** Default is Auto. Your ISP advises on using Chap or Pap.
- **MTU:** Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) an IP attempts to send through the interface.

Click on the **Continue** button and wait for your connection to be connected.

If connection is successful the following image will be shown.



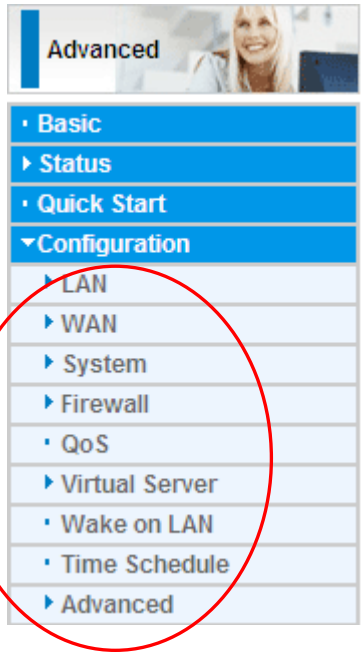
Set Wireless configuration



- **WLAN Service:** Default setting is set to **Enable**.
- **ESSID:** The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.
- **Channel ID:** Select the ID channel that you would like to use.
- **Security Mode:** You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

5.3 Configuration

Click this item to access the following sub-items that configure the ADSL router: **LAN, WAN, System, Firewall, QoS, Virtual Server, Wake on LAN, Time Schedule** and **Advanced.** These functions are described in the following sections.

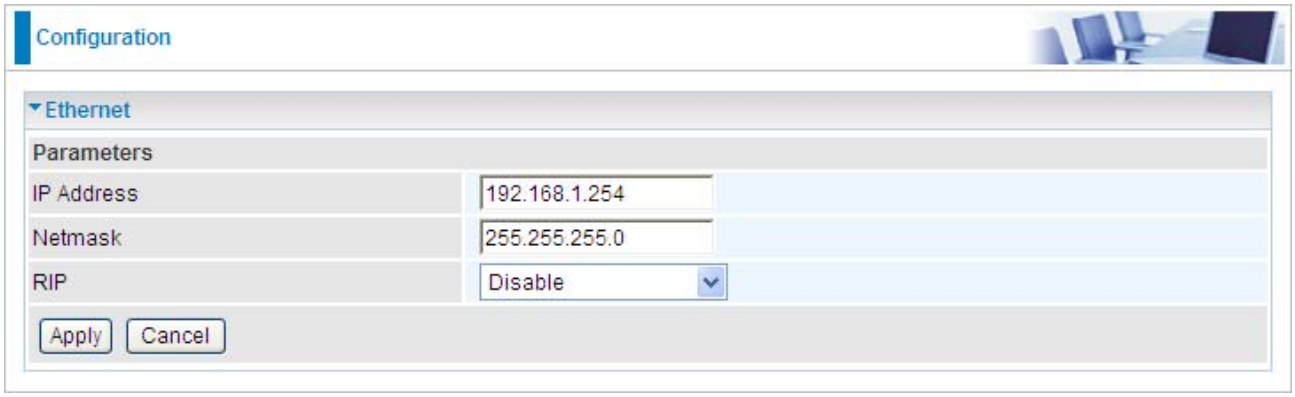


5.3.1 LAN (Local Area Network)

A Local Area Network (LAN) is a shared communication system to which many computers are attached and is limited to the immediate area, usually the same building or floor of a building.

There are six items within the LAN section: **Ethernet, IP Alias, Wireless (Only available for 7300N), Wireless Security (Only available for 7300N), WPS (Only available for 7300N)** and **DHCP Server**.

5.3.1.1 Ethernet

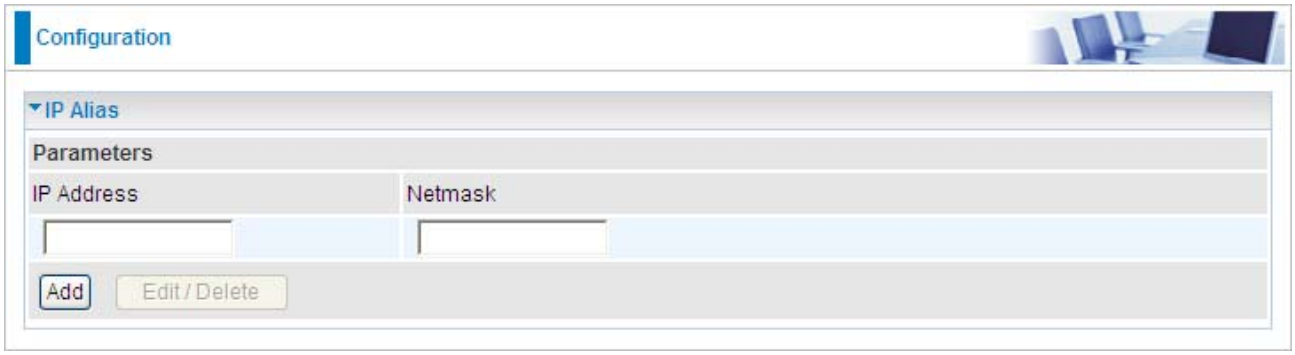


The router supports more than one Ethernet IP addresses in the LAN, and with distinct LAN subnets through which you can access the Internet at the same time. Users usually only have one subnet in their LAN. The default IP address for the router is 192.168.1.254.

- **IP Address:** The default IP on this router.
- **Netmask:** The default subnet mask on this router.
- **RIP:** RIP v1, RIP v2, RIP v1+v2 and RIP v2 Multicast.

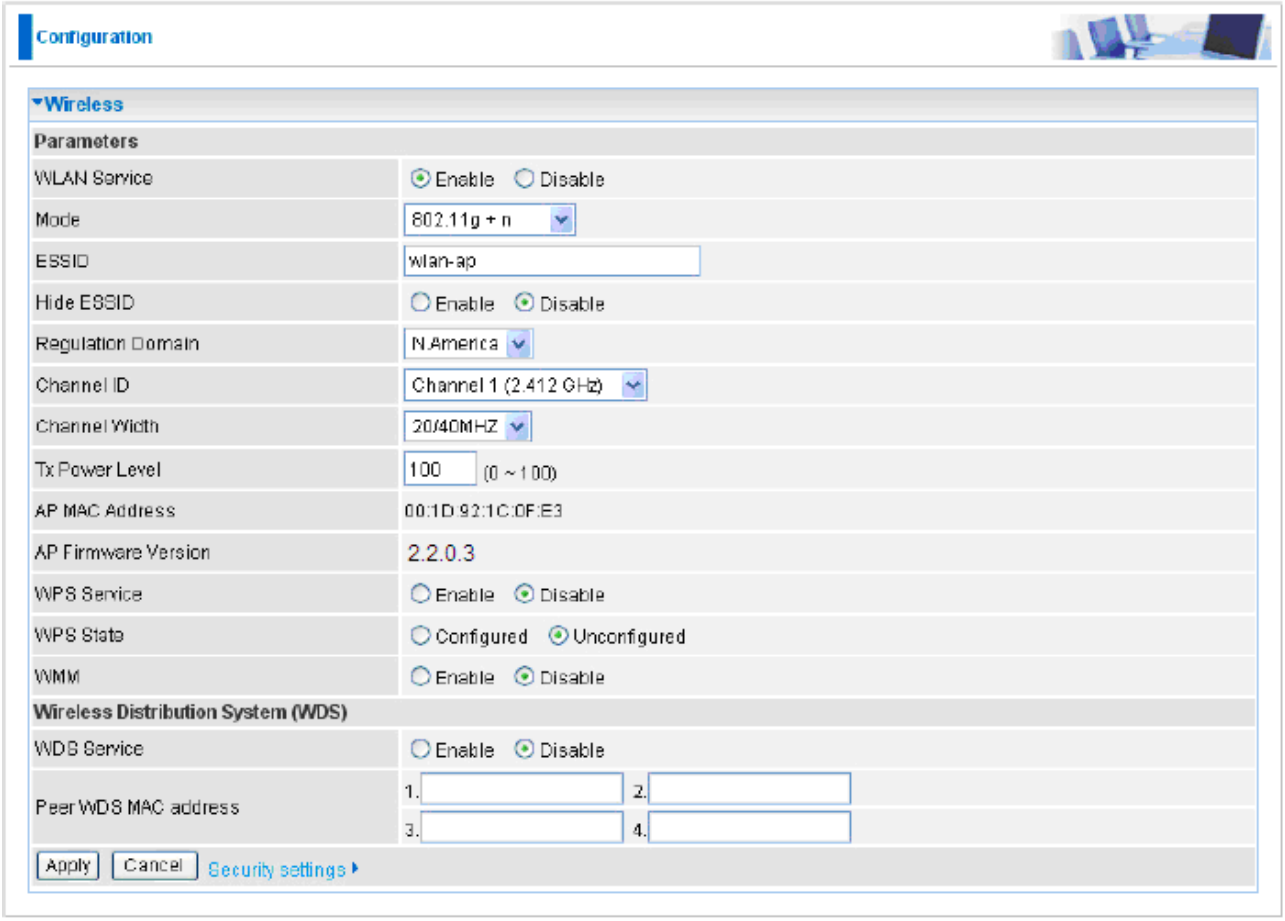
5.3.1.2 IP Alias

This function allows the creation of multiple virtual IP interfaces on this router. It helps to connect two or more local networks to the ISP or remote node. In this case, an internal router is not required.



- **IP Address:** Specify an IP address on this virtual interface.
- **Netmask:** Specify a subnet mask on this virtual interface.

5.3.1.3 Wireless (Only available for 7300N)



Parameters

WLAN Service: Default setting is set to **Enable**.

Mode: The default setting is **802.11g+n** (Mixed mode). If you do not know or have both 11g and 11n devices in your network, then keep the default in **mixed mode**. From the drop-down manual, you can select **802.11g** if you have only 11g card. If you have only 11b card, then select **802.11b**. If you have only 11n card, then select **802.11n**.

ESSID: The ESSID is the unique name of a wireless access point (AP) to be distinguished from another. For security propose, change to a unique ID name to the AP which is already built-in to the router's wireless interface. It is case sensitive and must not excess 32 characters. Make sure your wireless clients have exactly the ESSID as the device, in order to get connected to your network.

Note: ESSID is case sensitive and must not excess 32 characters.

Hide ESSID: It is function in which transmits its ESSID to the air so that when wireless client searches for a network, router can then be discovered and recognized. Default setting is **Disable.**

⊙ **Enable:** Select Enable if you do not want broadcast your ESSID. When select Enable,

no one will be able to locate the Access Point (AP) of your router.

⊙ **Disable:** When Disable is selected, you can allow anybody with a wireless client to be able to locate the Access Point (AP) of your router.

- **Regulation Domain:** There are seven Regulation Domains for you to choose from, including **North America (N.America)**, **Europe**, **France**, etc. The Channel ID will be different based on this setting.
- **Channel ID:** Select the ID channel that you would like to use.
- **Channel Wdith:** Select either **20 MHz** or **20/40 MHz** for the channel bandwidth. The higher the bandwidth the better the performance will be.
- **Tx Power Level:** It is function that enhances the wireless transmitting signal strength. User may adjust this power level from minimum 0 up to maximum 100.

Note: The Power Level maybe different in each access network user premises environment and choose the most suitable level for your network.

- **AP MAC Address:** It is a unique hardware address of the Access Point.
- **AP Firmware Version:** The Access Point firmware version.
- **WPS service:** Enable / disable
- **WPS State:** Current WPS state in AP. It is be used for WCN (Windows Connect Now).
  - ⊙ **Configured:** This AP is be configured via WPS. It is not allowed to configure via WCN.
  - ⊙ **Unconfigured:** This AP is un-configured via WPS. It can be configured via WCN.

WMM: This feature works concurrently with QoS that enables the system to prioritize the flow of data packets according to 4 categories: Voice, Video, Best Efforts and Background.

- **Enable:** Check to activate WMM feature.
- **Disable:** Check to deactivate WMM feature.

Wireless Distribution System (WDS)

It is a wireless access point mode that enables wireless link and communication with other access point. It is easy to be installed, simply define the peer's MAC address of the connected AP. WDS takes advantages of cost saving and flexibility which no extra wireless client device is required to bridge between two access points and extending an existing wired or wireless infrastructure network to create a larger network.

- **WDS Service:** The default setting is **Disable.** Check **Enable** radio button to activate this function.
- **1. Peer WDS MAC Address:** It is the associated AP's MAC Address. It is important that your peer's AP must include your MAC address in order to acknowledge and communicate with each other.

2. Peer WDS MAC Address: It is the second associated AP's MAC Address.

3. Peer WDS MAC Address: It is the third associated AP's MAC Address.

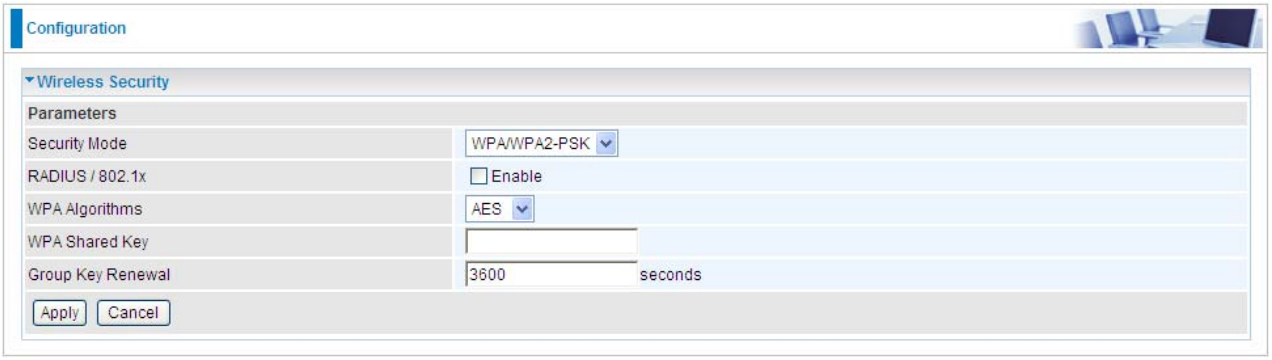
4. Peer WDS MAC Address: It is the fourth associated AP's MAC Address.

Note: For MAC Address, Semicolon (:) or Dash (-) must be included.

5.3.1.4 Wireless Security (Only available for 7300N)

You can disable or enable with WPA or WEP for protecting wireless network. The default mode of wireless security is **Disable**.

WPA / WPA2



Security Mode: You can choose the type of security mode you want to apply from the drop down menu.

RADIUS/802.1x: Whether to enable RADIUS function or not (For WPA/WPA2/WEP encryption).

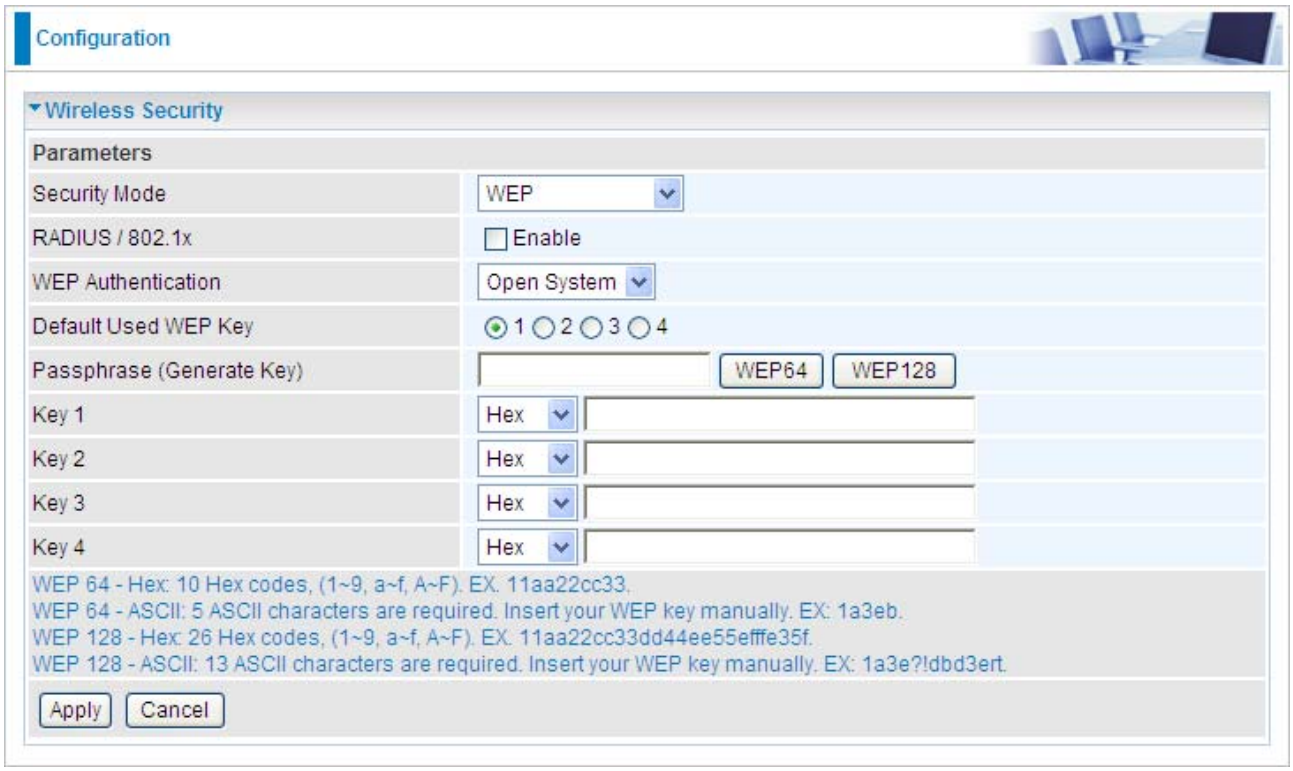
WPA Algorithms: There are 3 types of the WPA-PSK, WPA2-PSK & WPA/WPA2-PSK. The WPAPSK adapts the TKIP (Temporal Key Integrity Protocol) encrypted algorithms, which incorporates Message Integrity Code (MIC) to provide protection against hackers. The WPA2-PSK adapts CCMP (Cipher Block Chaining Message Authentication Code Protocol) of the AES (Advanced Encryption Security) algorithms.

WPA Shared Key: The key for network authentication. The input format is in character style and key size should be in the range between 8 and 63 characters.

Group Key Renewal: The period of renewal time for changing the security key automatically between wireless client and Access Point (AP). Default value is 3600 seconds.

Click Apply to confirm the settings.

WEP



RADIUS / 802.1x: Whether to enable RADIUS / 802.1x.

WEP Authentication: To prevent unauthorized wireless stations from accessing data transmitted over the network, the router offers secure data encryption, known as WEP. There are 3 options to select from: **Open System, Shared key** or **both**.

Default Used WEP Key: Select the encryption key ID; please refer to **Key (1~4)** below.

Passphrase: This is used to generate WEP keys automatically based upon the input string and a pre-defined algorithm in WEP64 or WEP128.

Key (1-4): Enter the key to encrypt wireless data. To allow encrypted data transmission, the WEP Encryption Key values on all wireless stations must be the same as the router. There are four keys for your selection. The input format can be either HEX style or ASCII format, 10 and 26 HEX codes or 5 and 13 ASCII codes are required for WEP64 and WEP128 respectively.

Click Apply to confirm the settings.

Note: *For information about settling Radius/802.1x, please refer to* WLAN *setup section.*

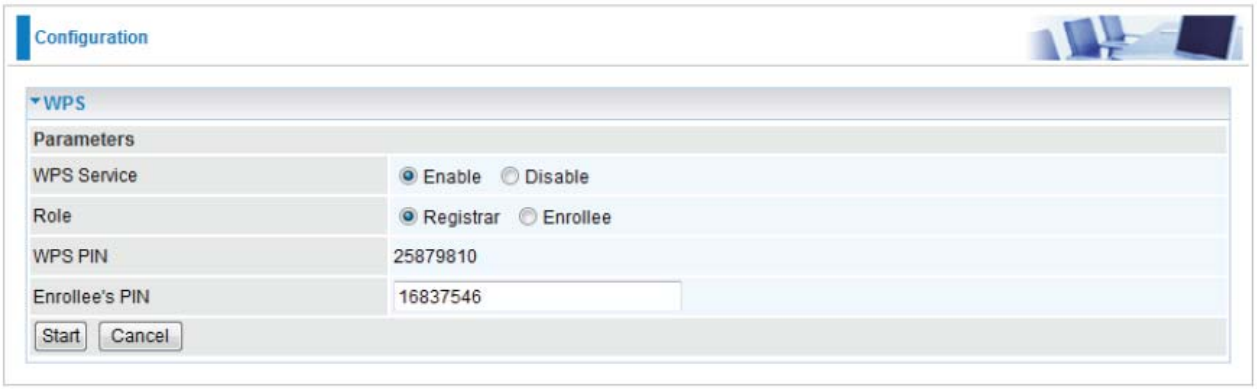
5.3.1.5 WPS (Only available for 7300N)

WPS (WiFi Protected Setup) feature is a standard protocol created by Wi-Fi Alliance. This feature greatly simplifies the steps needed to create a Wi-Fi network for a residential or an office setting. WPS supports 2 types of configuration methods which are commonly known among consumers: **PIN Method** & **PBC Method**.

Wi-Fi Network Setup (only for BiPAC 7300N)

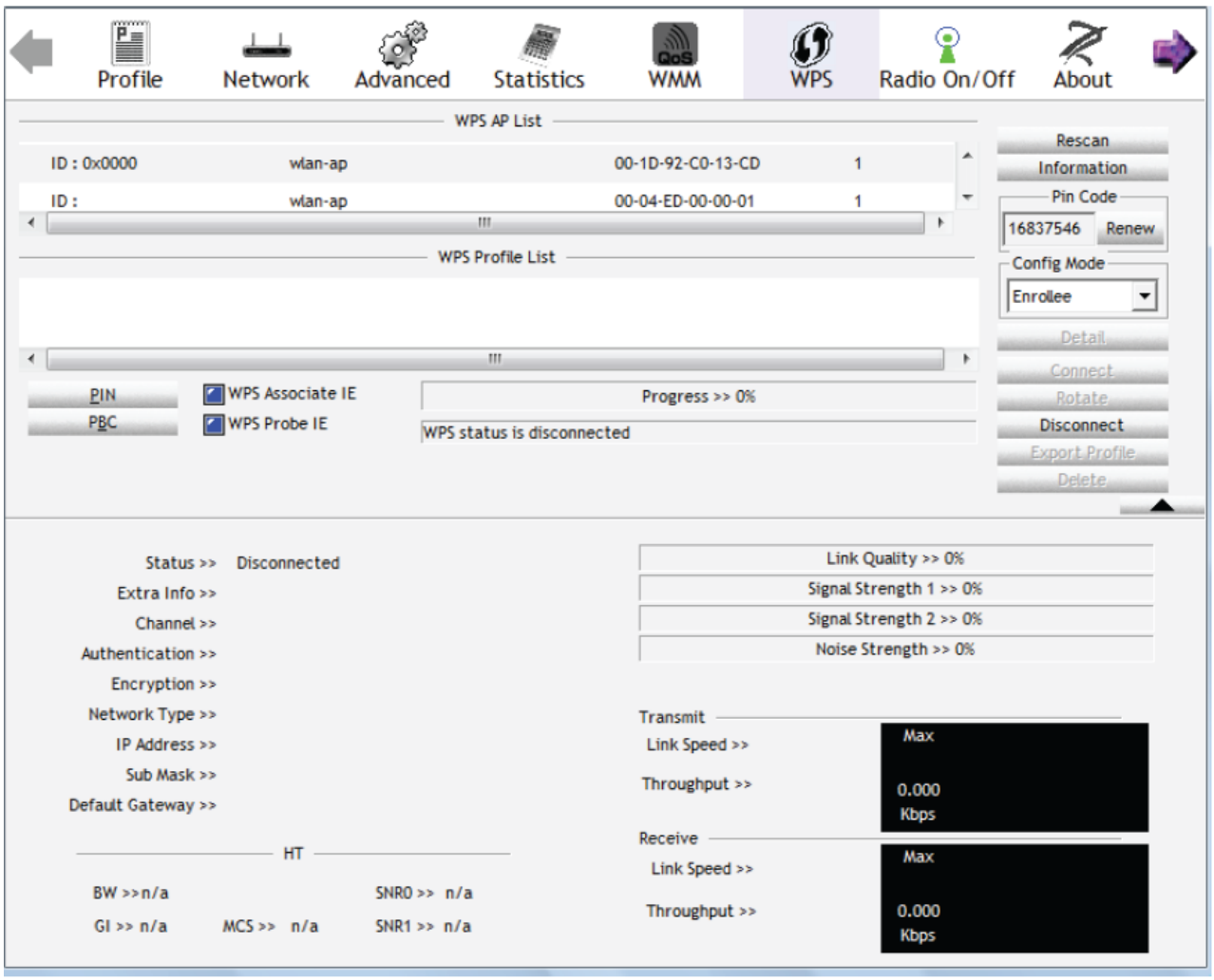
PIN Method: Configure AP as Registrar

1. Jot down the client's Pin (eg. 16837546).

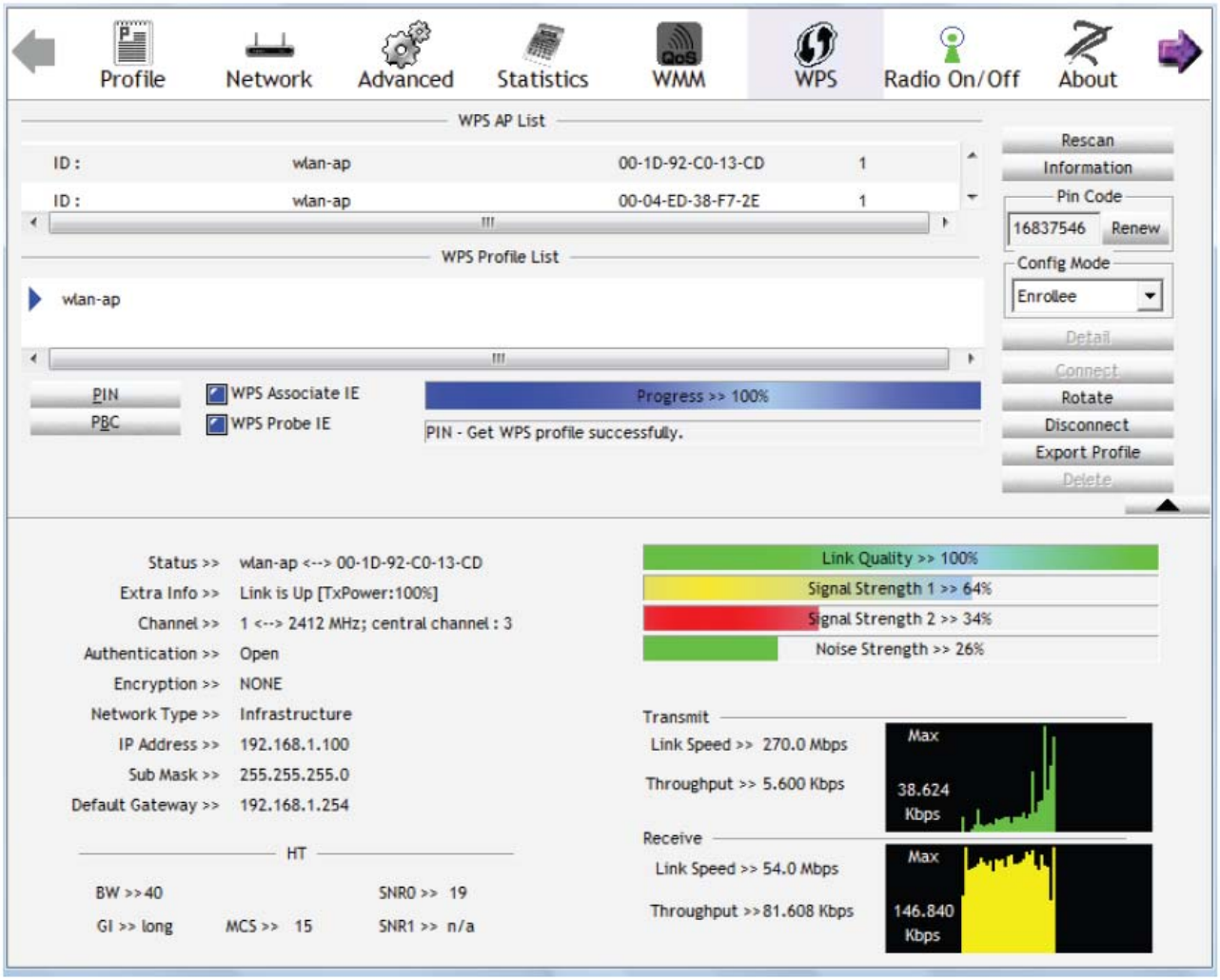


2. Enter the Enrollee's PIN number and then press Start.

3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Enrollee, press the WPS button on the top bar, select the AP (eg. wlan-ap) from the WPS AP List column. Then press the PIN button located on the middle left of the page to run the scan.



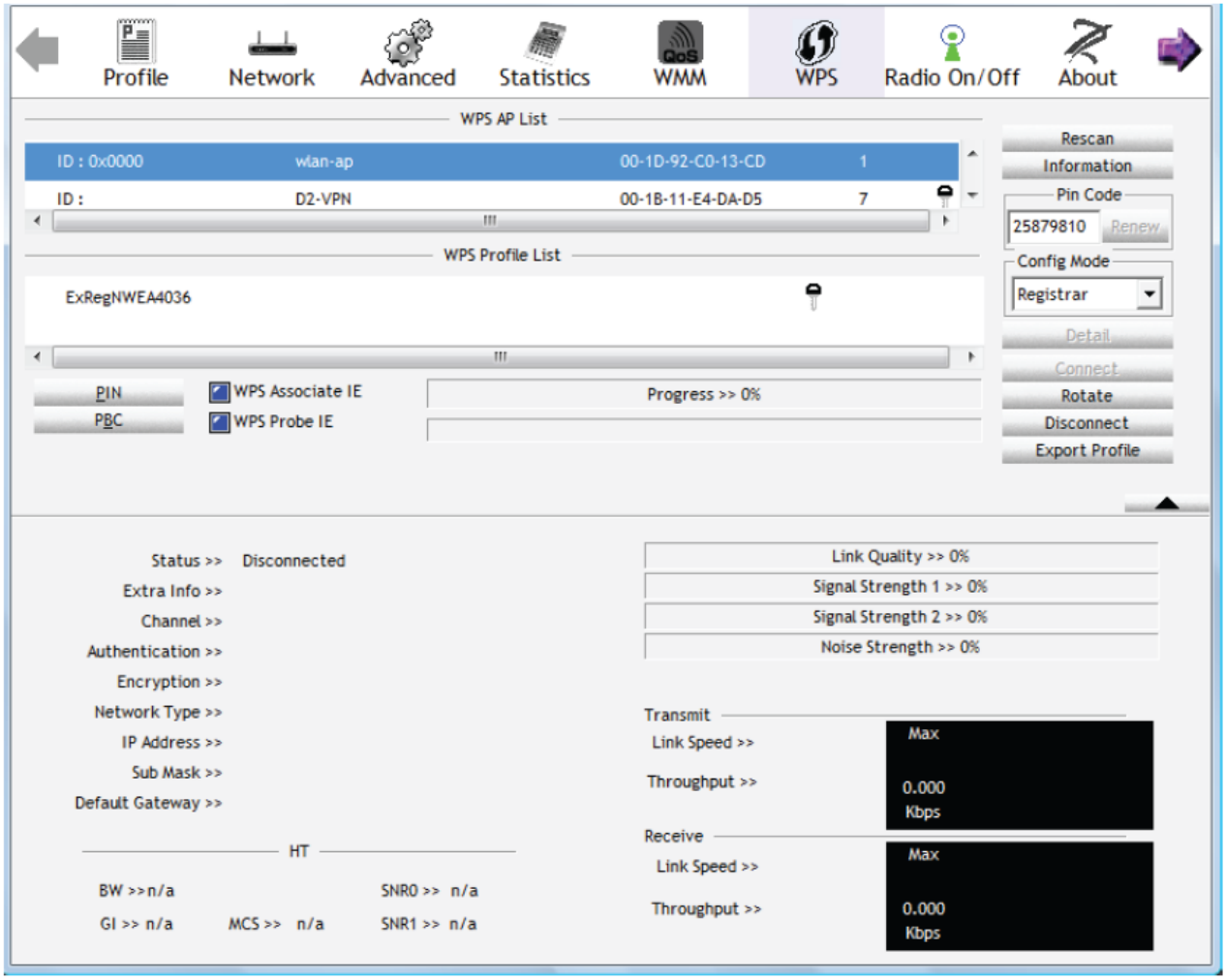
4. The client's SSID and security setting will now be configured to match the SSID and security setting of the registrar.



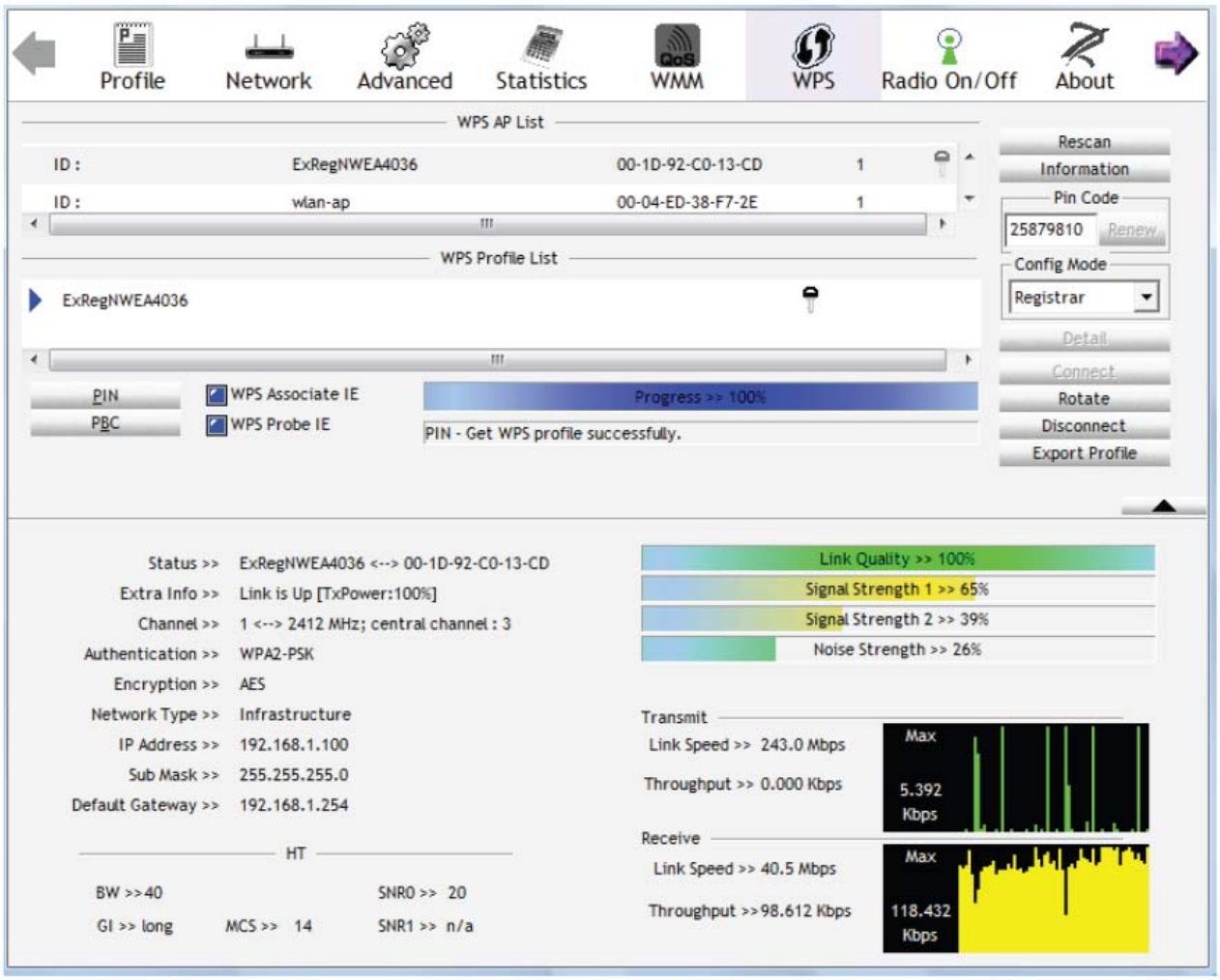
PIN Method: Configure AP as Enrollee

1. In the WPS configuration page, change the Role to Enrollee. Then press Start.
2. Jot down the WPS PIN (eg. 25879810).

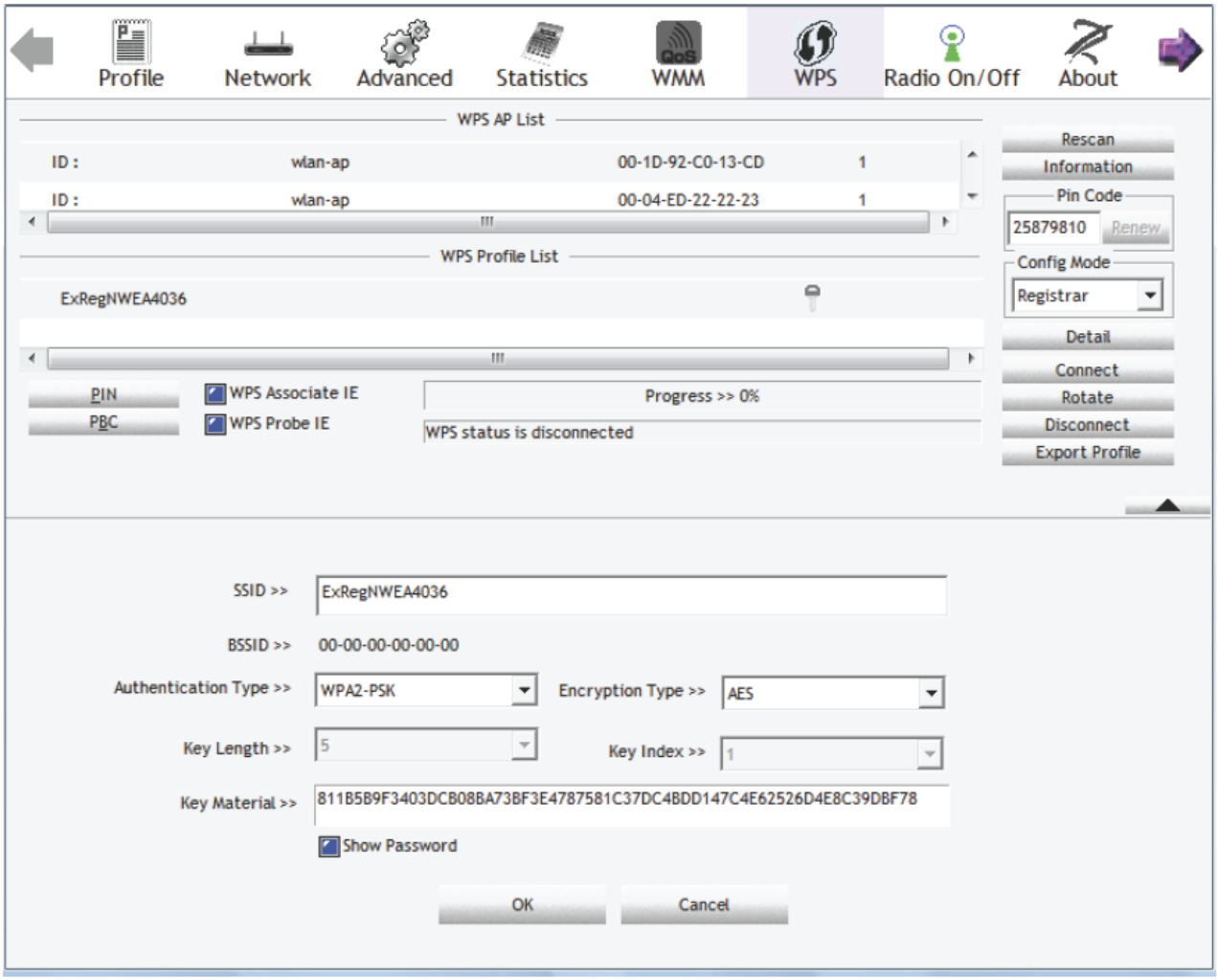
3. Launch the wireless client's WPS utility (eg. Ralink Utility). Set the Config Mode as Registrar. Enter the PIN number in the PIN Code column then choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PIN button to run the scan.

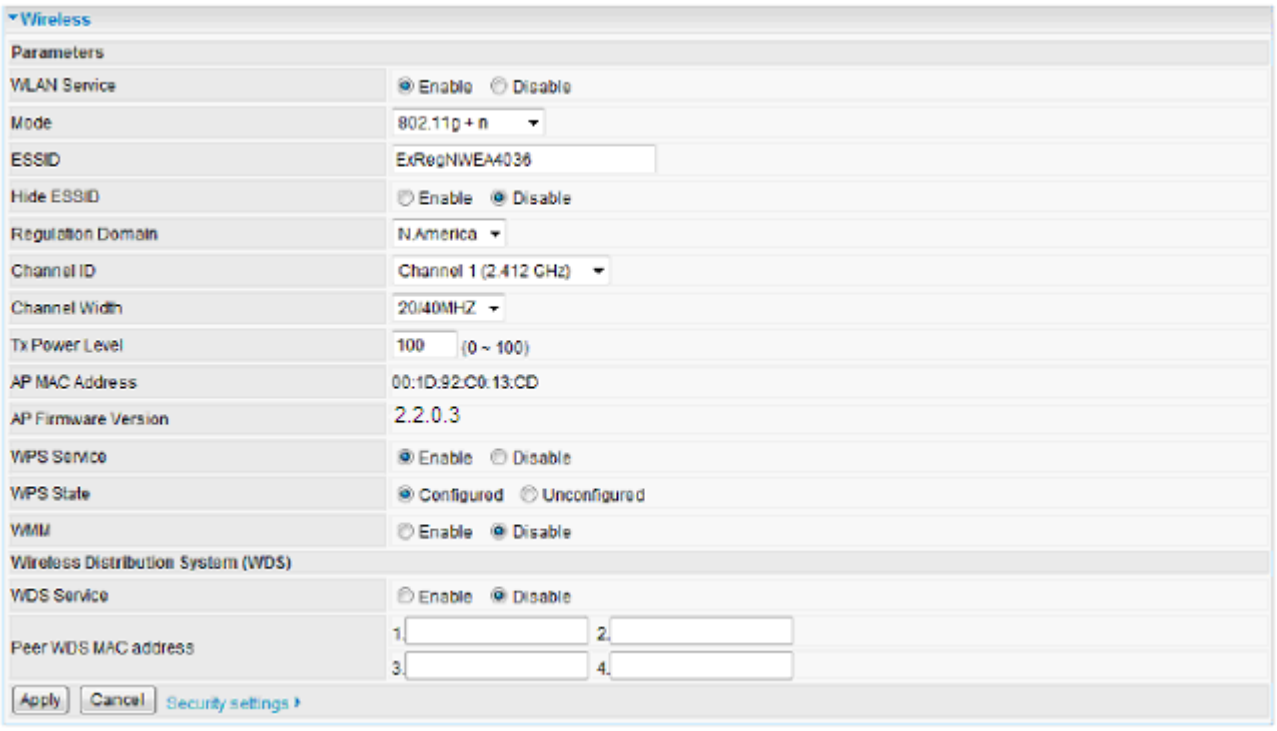


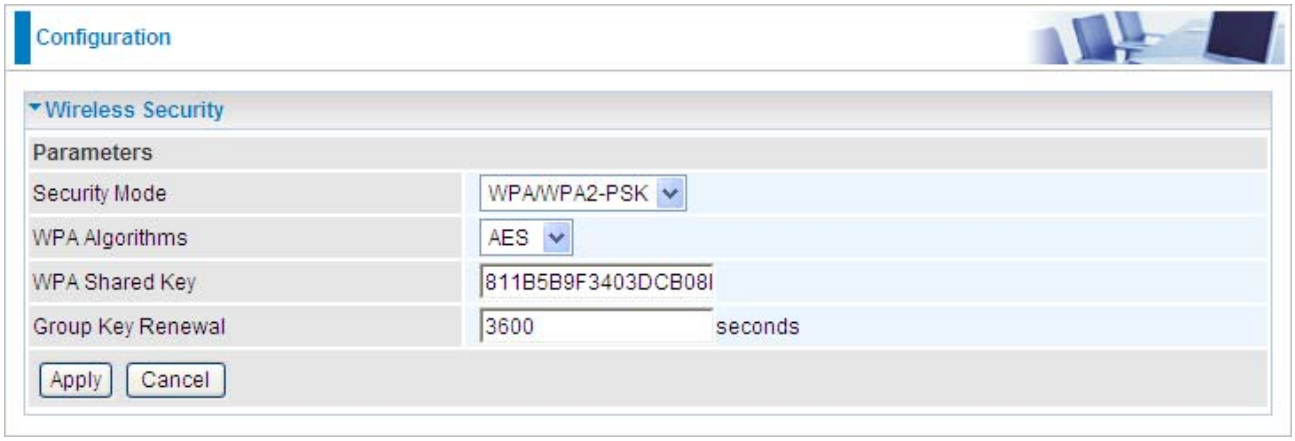
4. The router's (AP's) SSID and security setting will now be configured to match the SSID and security setting of the registrar.



5. Now to make sure that the setup is correctly done, cross check to see if the SSID and the security setting of the registrar setting match with the parameters found on both Wireless Configuration and Wireless Security Configuration page.

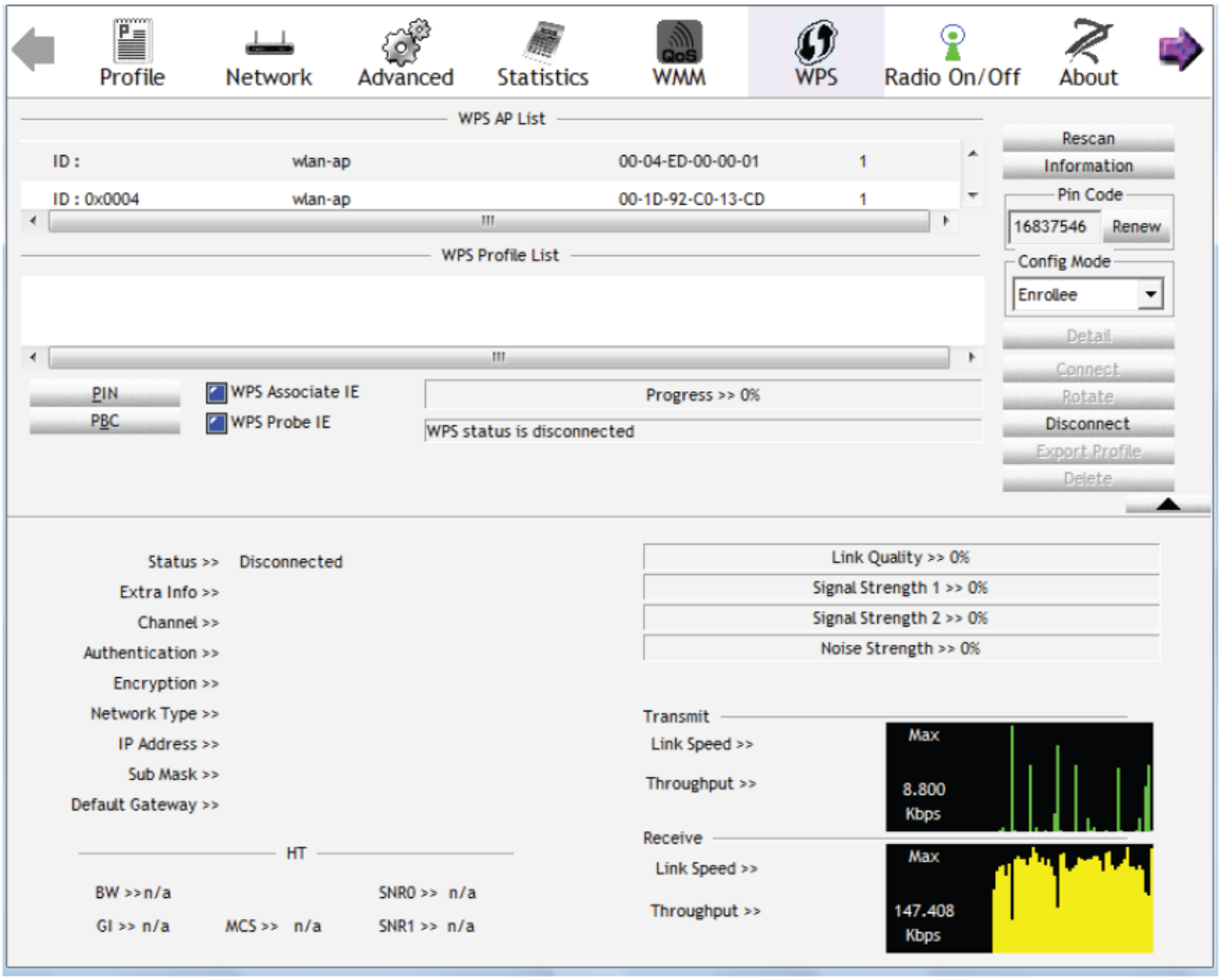

Profile
Network
Advanced
Statistics
WMM
WPS
Radio On/Off
About
WPS AP List
ID : wlan-ap 00-1D-92-C0-13-CD 1
ID : wlan-ap 00-04-ED-22-22-23 1
Rescan
Information
Pin Code
25879810
Renew
Config Mode
Registrar
Detail
Connect
Rotate
Disconnect
Export Profile
WPS Profile List
ExRegNWEA4036
PIN
PBC
WPS Associate IE
WPS Probe IE
Progress >> 0%
WPS status is disconnected
SSID >> ExRegNWEA4036
BSSID >> 00-00-00-00-00-00
Authentication Type >> WPA2-PSK
Encryption Type >> AES
Key Length >> 5
Key Index >> 1
Key Material >> 811B5B9F3403DCB08BA73BF3E4787581C37DC4BDD147C4E62526D4E8C39DBF78
Show Password
OK
Cancel


Wireless
Parameters
WLAN Service Enable Disable
Mode 802.11g + n
ESSID ExRegNWEA4036
Hide ESSID Enable Disable
Regulation Domain N.America
Channel ID Channel 1 (2.412 GHz)
Channel Width 20/40MHZ
Tx Power Level 100 (0 ~ 100)
AP MAC Address 00:1D:92:C0:13:CD
AP Firmware Version 2.2.0.3
WPS Service Enable Disable
WPS State Configured Unconfigured
WMM Enable Disable
Wireless Distribution System (WDS)
WDS Service Enable Disable
Peer WDS MAC address 1. 2. 3. 4.
Apply
Cancel
Security settings

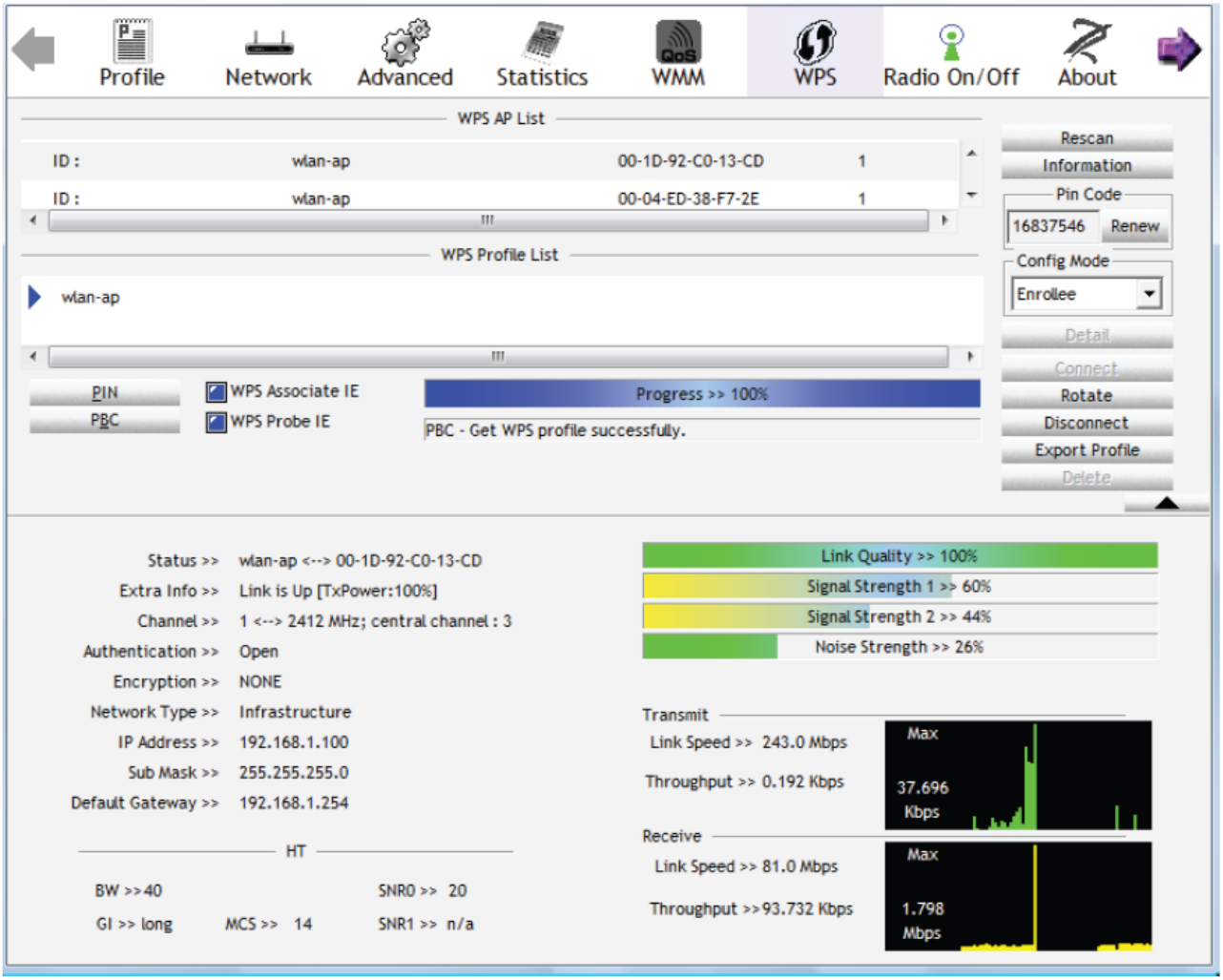


PBC Method:

1. Press the PBC button of the AP.
2. Launch the wireless client's WPS Utility (eg. Ralink Utility). Set the Config Mode as Enrollee. Then press the WPS button and choose the correct AP (eg. wlan-ap) from the WPS AP List section before pressing the PBC button to run the scan.

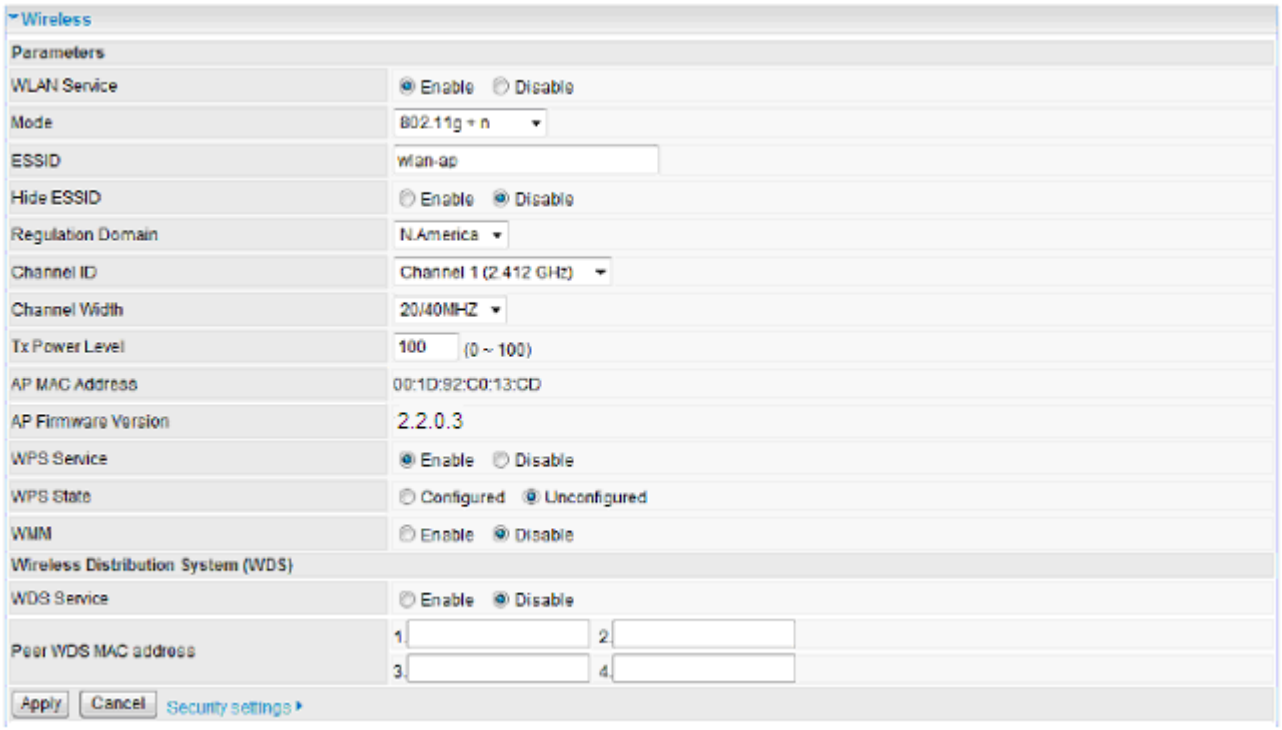


3. When the PBC button is pushed, a wireless communication will be established between your router and the PC. The client's SSID and security setting will now be configured to match the SSID and security setting of the router.

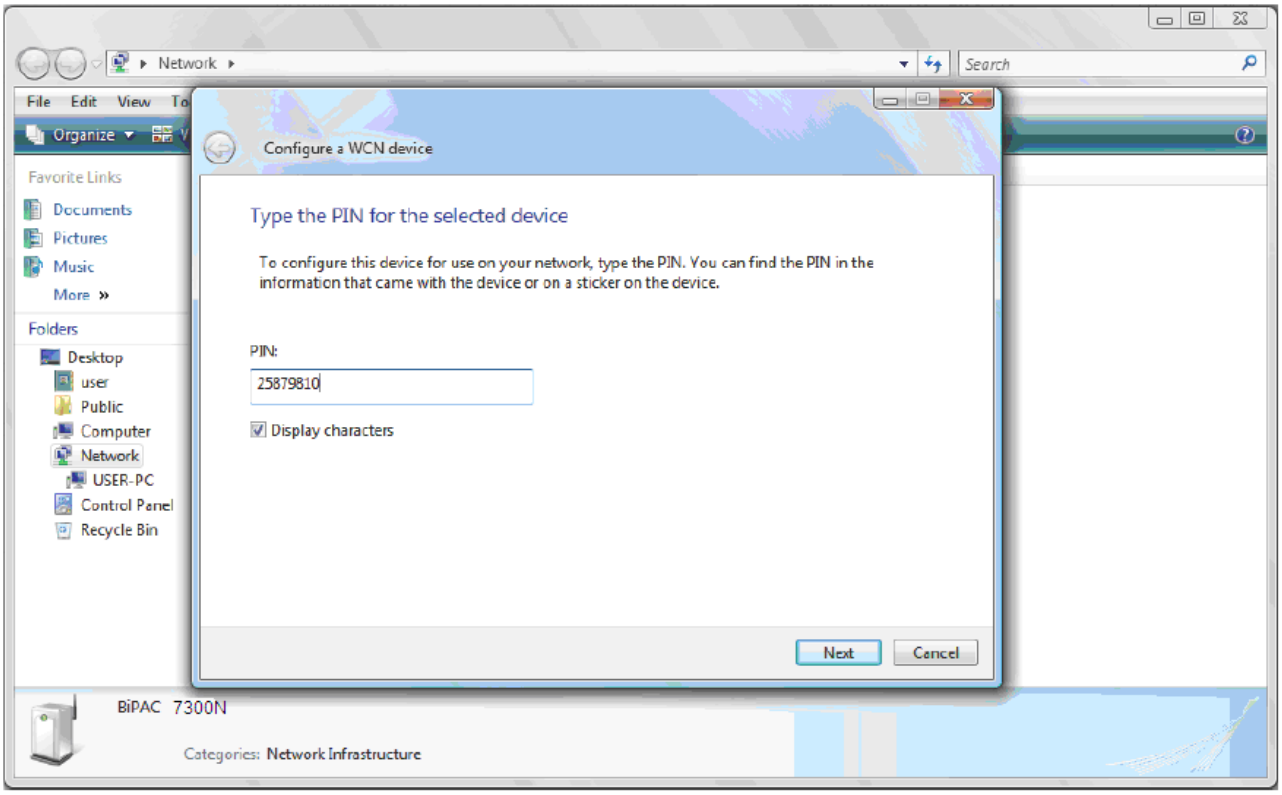


Wi-Fi Network Setup with Windows Vista WCN:

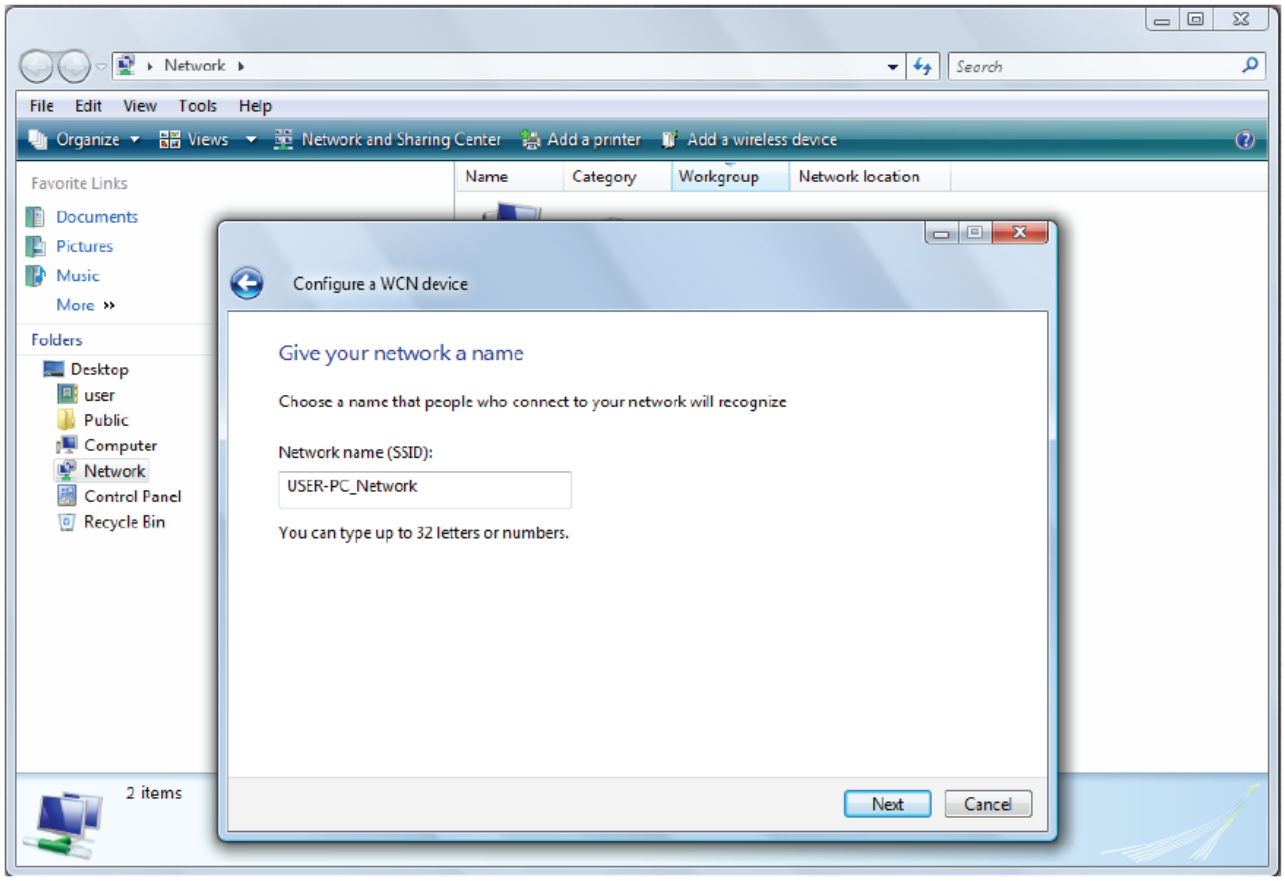
1. Jot down the AP PIN from the Web (eg. 25879810).
2. Access the Wireless configuration of the web GUI. Enable WPS service, set the WPS State to Unconfigured and then click Apply.



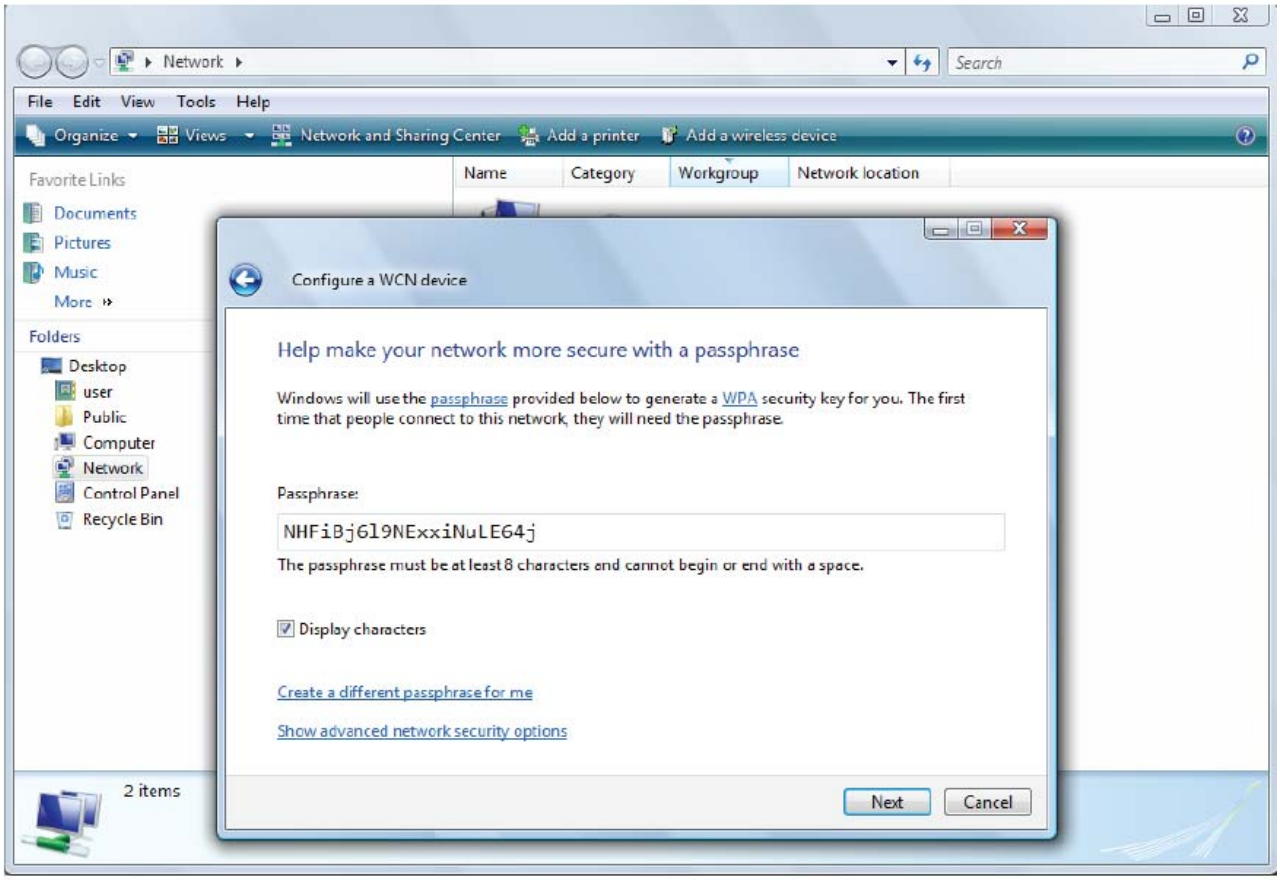
3. In your Vista operating system, access the Control Panel page, then select Network and Internet > View Network Computers and Devices. Double click on the BiPAC 7300N icon and enter the AP PIN in the column provided then press Next.



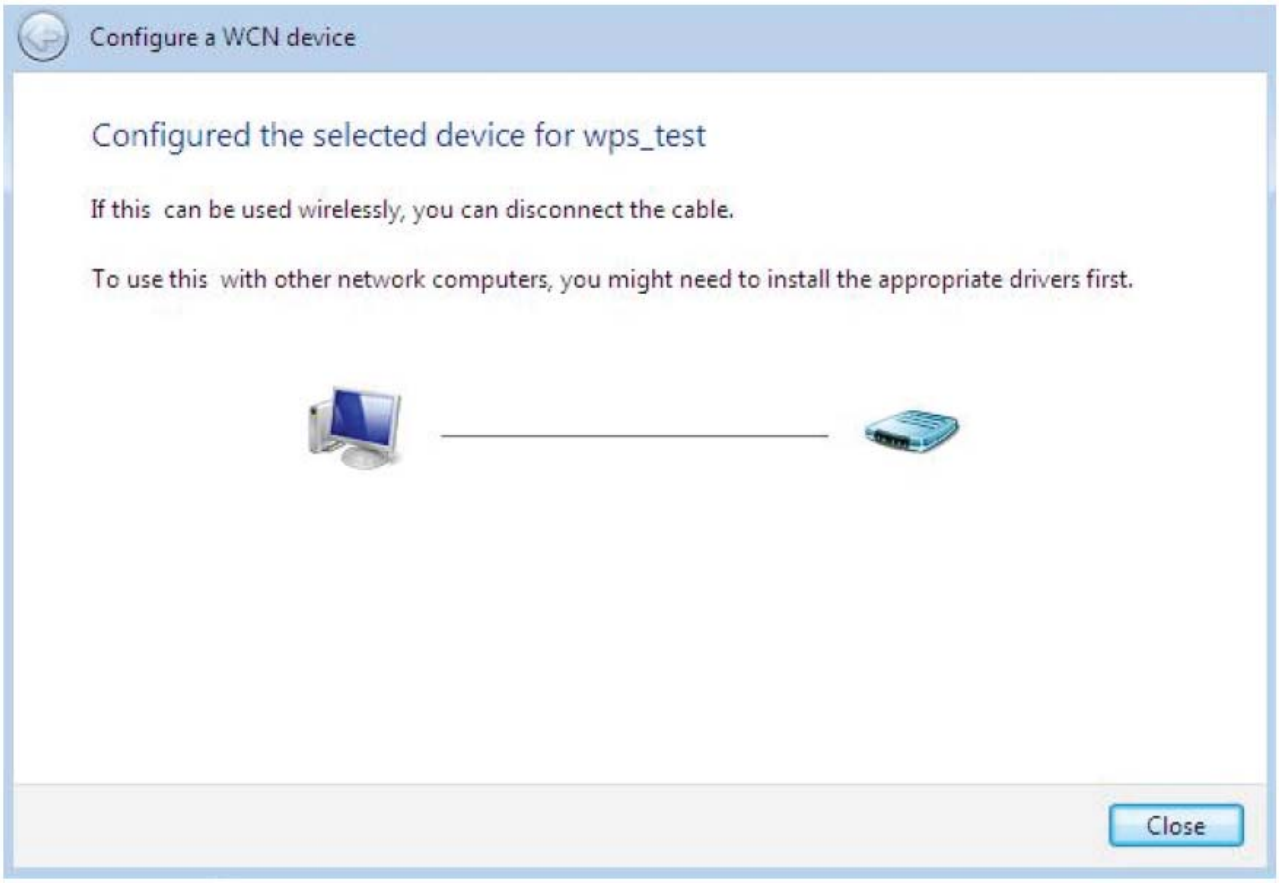
4. Enter the AP SSID then click Next.

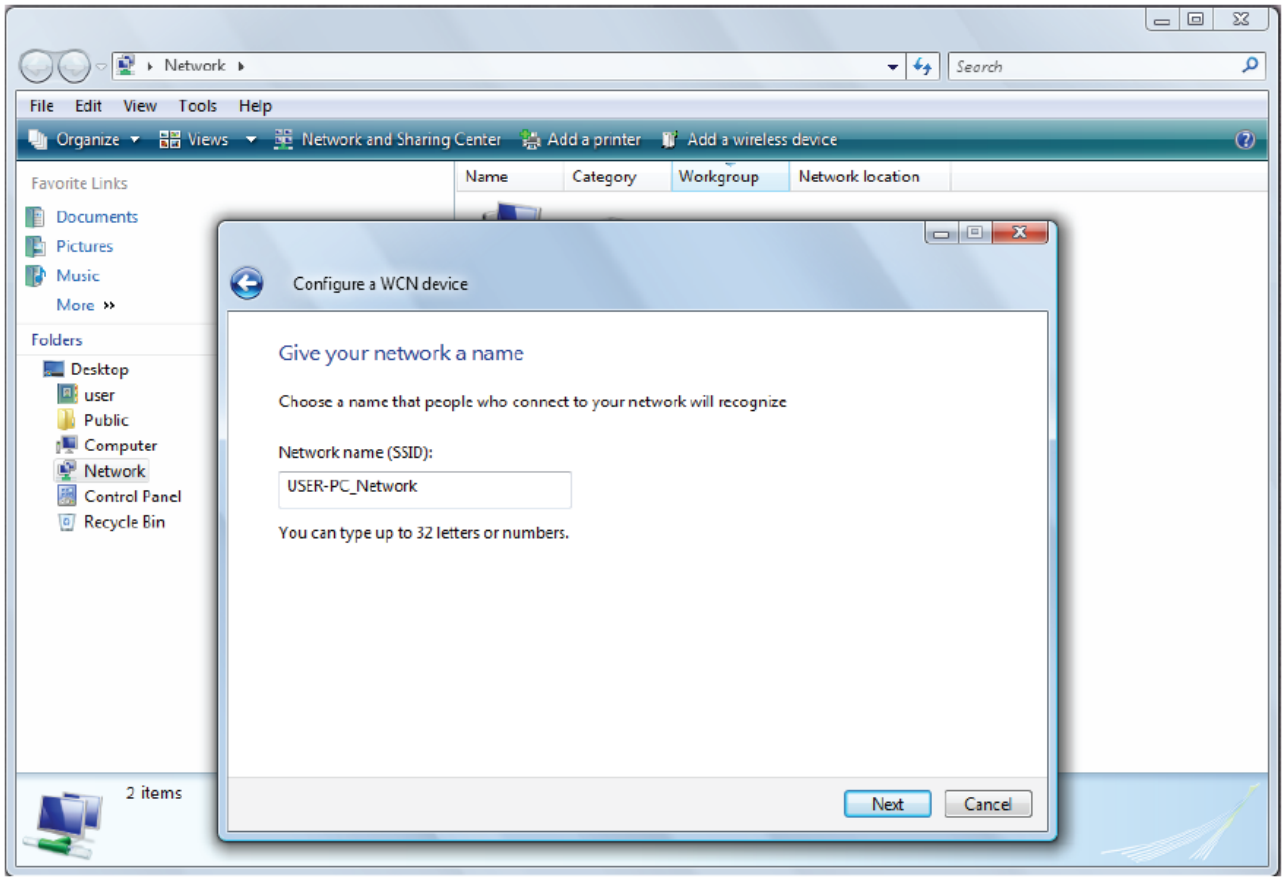


5. Enter the passphrase then click Next.



6. When you have come to this step, you will have completed the Wi-Fi network setup using the built-in WCN feature in Windows Vista.


Configure a WCN device
Configured the selected device for wps_test
If this can be used wirelessly, you can disconnect the cable.
To use this with other network computers, you might need to install the appropriate drivers first.
Close

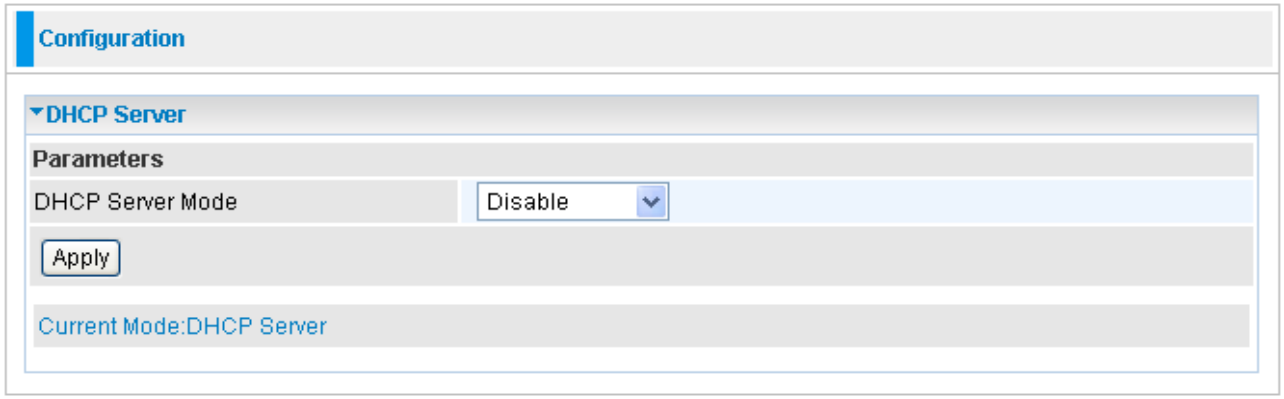


5.3.1.6 DHCP Server

You can disable or enable the DHCP (Dynamic Host Configuration Protocol) server or enable the router's DHCP relay functions. The DHCP protocol allows your router to dynamically assign IP addresses to PCs on your network if they are configured to obtain IP addresses automatically.

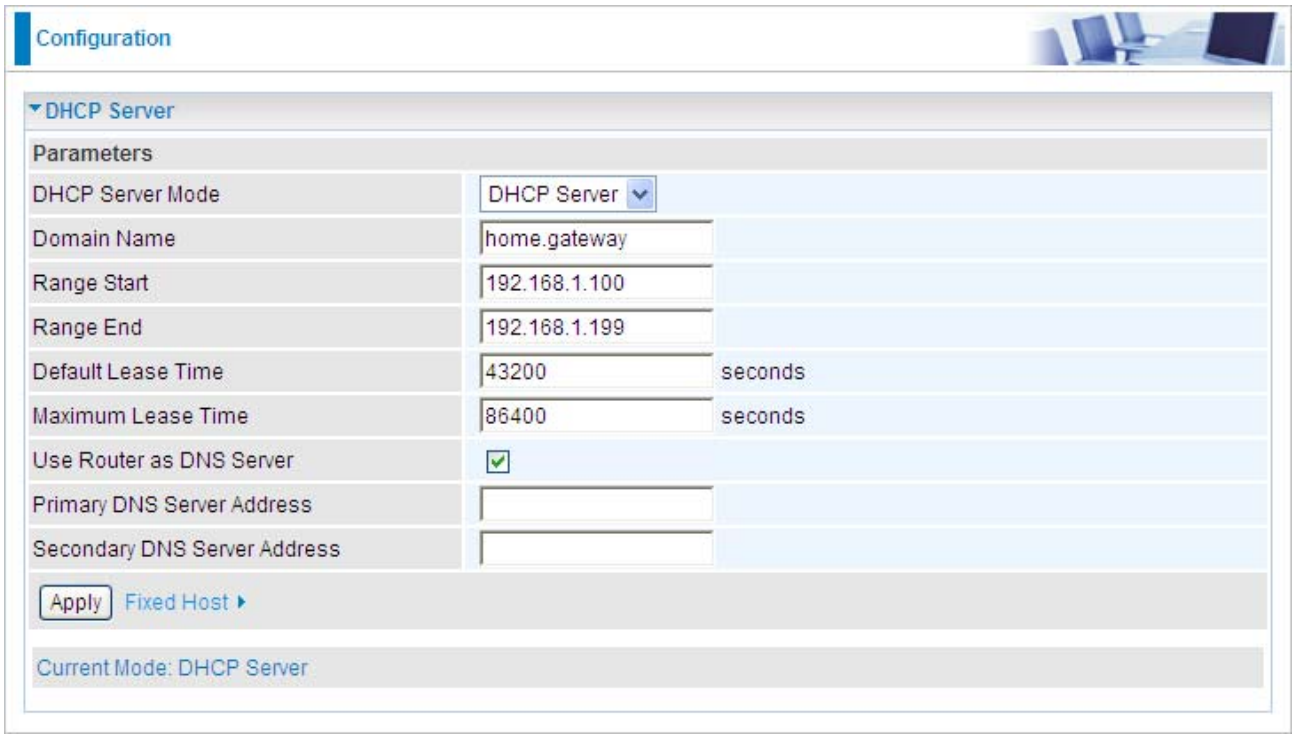
DHCP Server Mode: Disable

To disable the router's DHCP Server, check **Disabled** and then click **Apply.** When the DHCP Server is disabled, you will need to manually assign a fixed IP address to each PC on your network, and set the default gateway for each PC to the IP address of the router (the default is 192.168.1.254).



DHCP Server Mode: DHCP Server

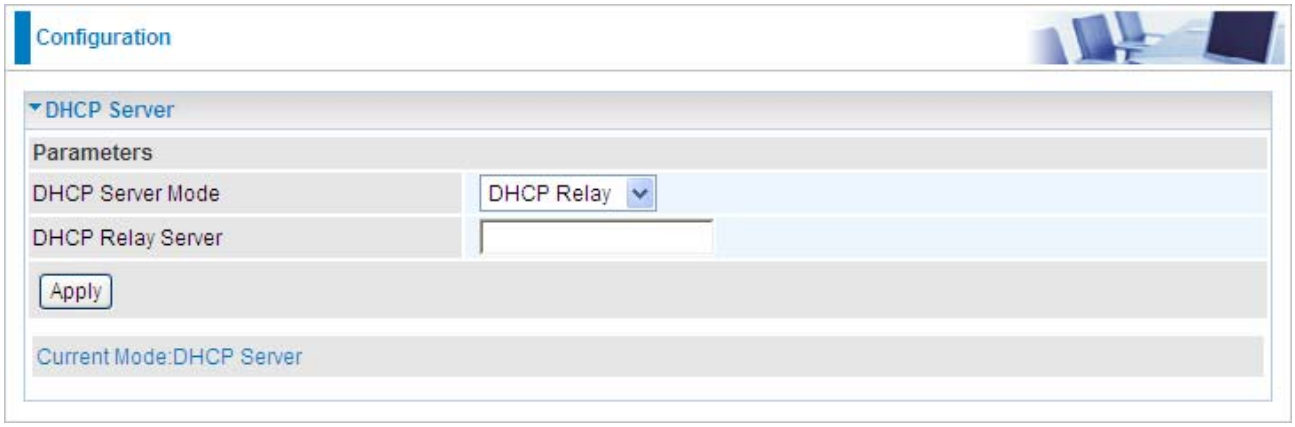
To configure the router's DHCP Server, check **DHCP Server**. You can then configure parameters of the DHCP Server including the IP pool (starting IP address and ending IP address to be allocated to PCs on your network), lease time for each assigned IP address (the period of time the IP address assigned will be valid), DNS IP address and the gateway IP address. These details are sent to the DHCP client (i.e. your PC) when it requests an IP address from the DHCP server. Click **Apply** to enable this function. If you check "**Use Router as a DNS Server**", the ADSL Router performs the domain name lookup, finds the IP address from the outside network automatically and forwards it back to the requesting PC in the LAN (your Local Area Network).



DHCP Server Mode: DHCP Relay

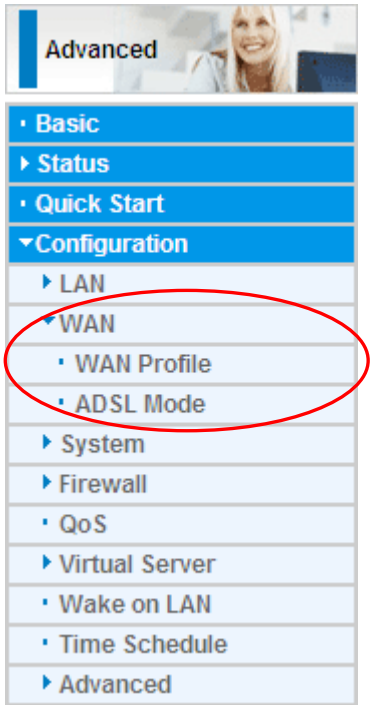
If you check **DHCP Relay** and then you must enter the IP address of the DHCP server which

assigns an IP address back to the DHCP client in the LAN. Use this function only if advised to do so by your network administrator or ISP. Click **Apply** to enable this function.



5.3.2 WAN (Wide Area Network)

A WAN (Wide Area Network) is an outside connection to another network or the Internet. There are two items within the **WAN** section: **WAN Profile** and **ADSL Mode.**

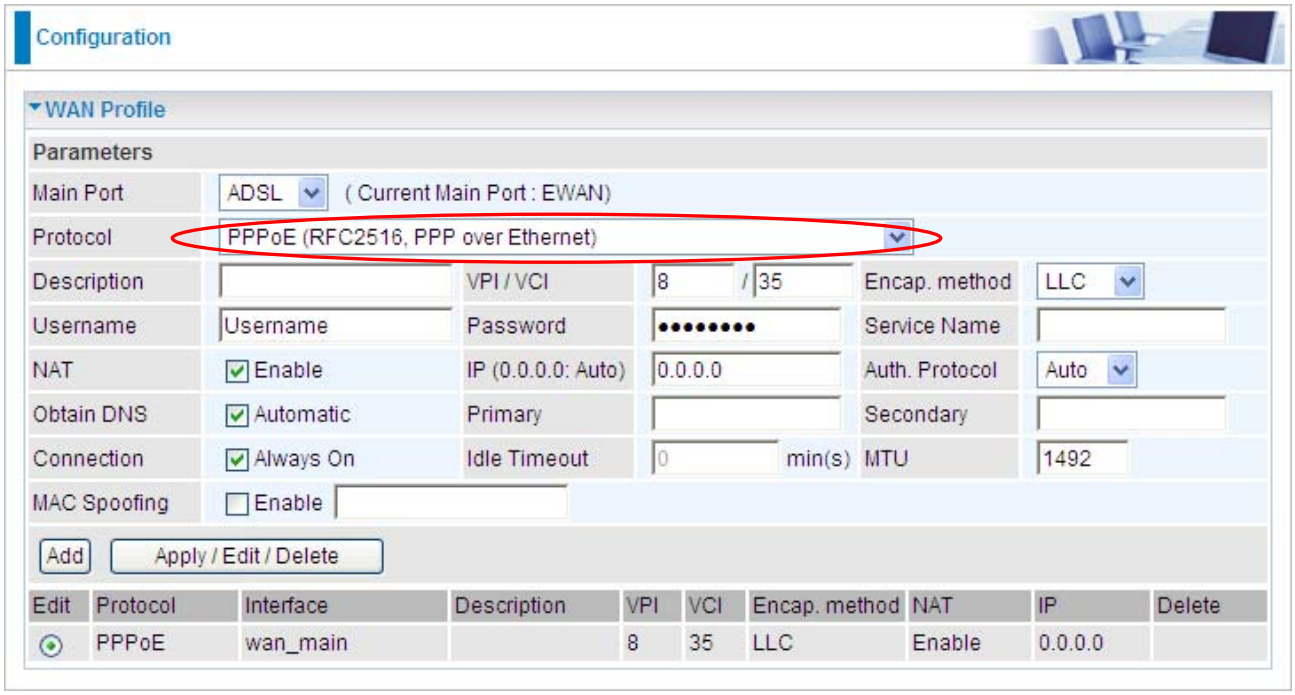


5.3.2.1 WAN Profile

Main Port--ADSL

PPPoE Connection (ADSL)

PPPoE (PPP over Ethernet) provides access control in a manner similar to dial-up services using PPP.



Description: A user-definable name for this connection.

VPI/VCI: Enter the VPI and VCI information provided by your ISP.

Encap. method: Select the encapsulation format, the default is LLC. Select the one provided by your ISP

Username: Enter the username provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.

Password: Enter the password provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive)

Service Name: This item is for identification purposes. If it is required, your ISP provides you the information. Maximum input is **15** alphanumeric characters.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single ISP account, sharing a single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.

IP Address: Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.

Auth. Protocol: Default is **Auto.** Your ISP advises on using **Chap** or **Pap.**

Obtain DNS Automatically: Select this check box to use DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.

Connection:

⊙ **Always on:** If you want the router to establish a PPPoE session when starting up and to automatically re-establish the PPPoE session when disconnected by the ISP.

⊙ **Connect to Demand (un-select Always On):** If you want to establish a PPPoE session only when there is a packet requesting access to the Internet (i.e. when a program on your computer attempts to access the Internet). In this mode, you must set Idle Timeout value at same time.

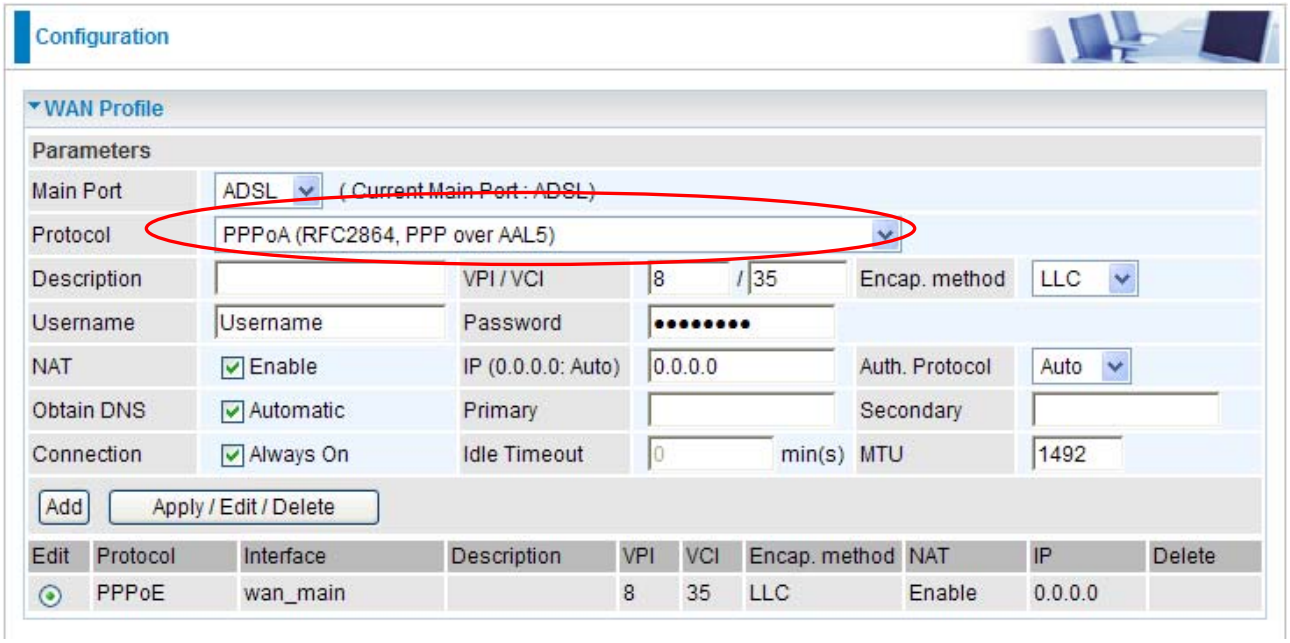
Idle Timeout: Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time. The minimum value is 10 minutes.

MTU: Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) an IP attempts to send through the interface.

MAC Spoofing: This option is required by some service Providers. You must fill the MAC address specified by your service provider when this information is required. The default setting is set to disable.

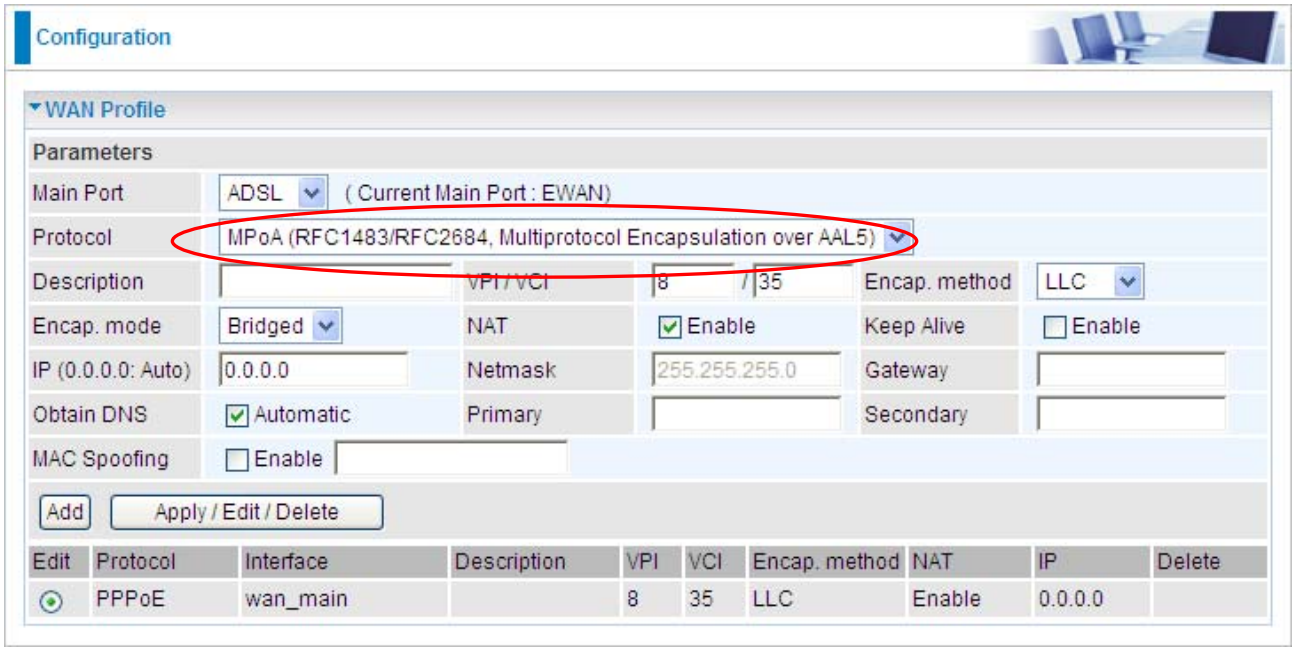
PPPoA Connection (ADSL)

PPPoA stands for Point to Point Protocol over ATM Adaptation Layer 5 (AAL5). It provides access control and billing functionality in a manner similar to dial-up services using PPP.



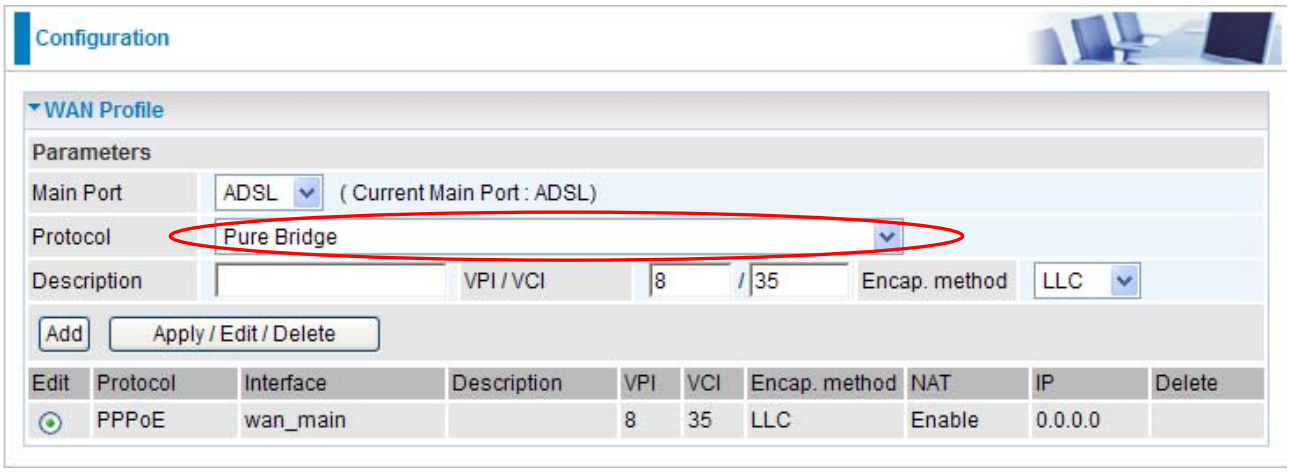
- **Description:** User-definable name for the connection.
- **VPI/VCI:** Enter the VPI and VCI information provided by your ISP.
- **Encapsulation method:** Select the encapsulation format, the default is LLC. Select the one provided by your ISP
- **Username:** Enter the username provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.
- **Password:** Enter the password provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive).
- **NAT:** The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account, sharing a single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.
- **IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.
- **Authentication Protocol:** Default is **Auto**. Your ISP should advise you on whether to use **Chap** or **Pap.**
- **Obtain DNS Automatically:** Select this check box to use DNS.
- **Primary DNS/ Secondary DNS:** Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the Netmask.
- **Connection:**
  - ⊙ **Always on:** The router will establish a PPPoA session when starting up and to automatically re-establish the PPPoA session when disconnected by the ISP.
  - ⊙ **Connect to Demand (un-select Always On):** If you want to establish a PPPoA session only when there is a packet requesting access to the Internet (i.e. when a program on your computer attempts to access the Internet). In this mode, you must set Idle Timeout value at same time.
- **Idle Timeout:** Auto-disconnect the broadband firewall gateway when there is no activity on the line for a predetermined period of time. The minimum value is 10 minutes.
- **MTU:** Maximum Transmission Unit. The size of the largest datagram (excluding media-specific headers) that the IP attempts to send through the interface.

MPoA Connection (ADSL)



- **Description:** Your description of this connection.
- **VPI and VCI:** Enter the VPI and VCI information provided by your ISP.
- **Encap. method:** Select the encapsulation format, the default is LLC. Select the one provided by your ISP.
- **Encap. mode:** Choose whether you want the device to function as bridge mode or routing mode.
- **NAT:** The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account, sharing the single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.
- **Keep Alive:** Set Enable to keep the router on line and prevent to be disconnected by the ISP when they think there is no activity on the line.
- **IP Address:** Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.
- **Netmask:** The default is 255.255.255.0. User can change it to other such as 255.255.255.128. Type the netmask assigned to you by your ISP (if given)
- **Gateway:** Enter the IP address of the default gateway.
- **Obtain DNS Automatically:** Select this check box to use DNS.
- **Primary DNS/ Secondary DNS:** Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the netmask.

Pure Bridge Connections (ADSL)



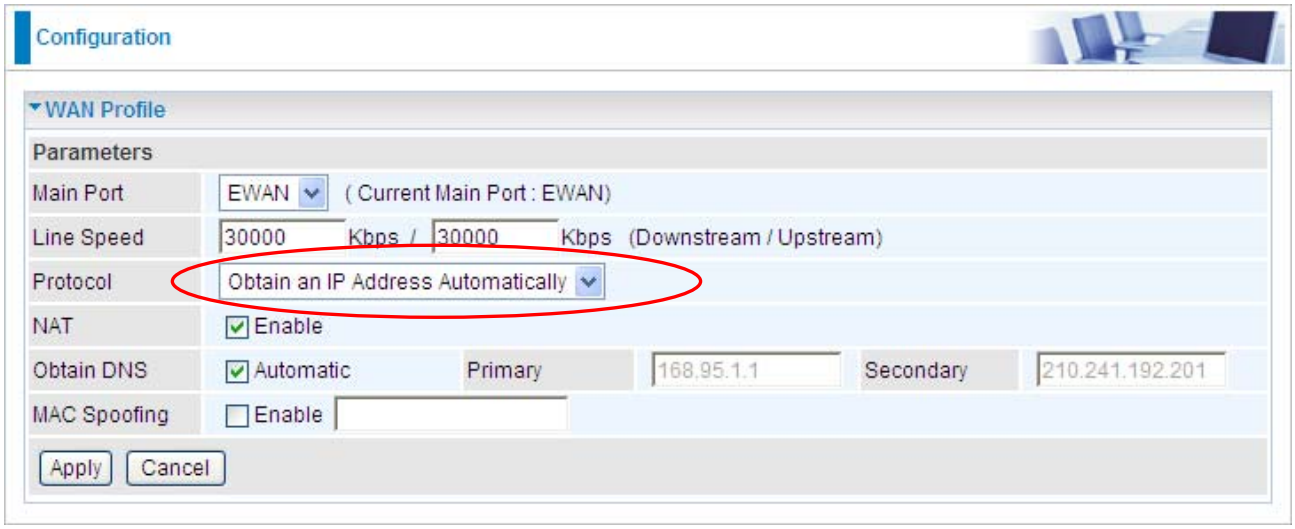
- **Description:** A user-definable name for this connection.
- **VPI/VCI:** Enter the VPI and VCI information provided by your ISP.
- **Encap. method:** Select the encapsulation format, this is provided by your ISP.

Main Port—EWAN

Besides using ADSL to get connected to the Internet, BiPAC 7300(N) offers its Ethernet port 1 as a WAN port to be used to connect to Cable Modems, VDSL and fibre optic lines. This alternative, yet faster method to connect to the internet will provide users with more flexibility to get online

Obtain an IP Address Automatically (EWAN)

When connecting to the ISP, BiPAC 7300(N) also functions as a DHCP client. BiPAC 7300(N) can automatically obtain an IP address, netmask, gateway address, and DNS server addresses if the ISP assigns this information via DHCP.



Line Speed: Set the downstream and upstream of your connection in kilobytes per second. The connection speed is used by QoS settings.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single ISP account, sharing a single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.

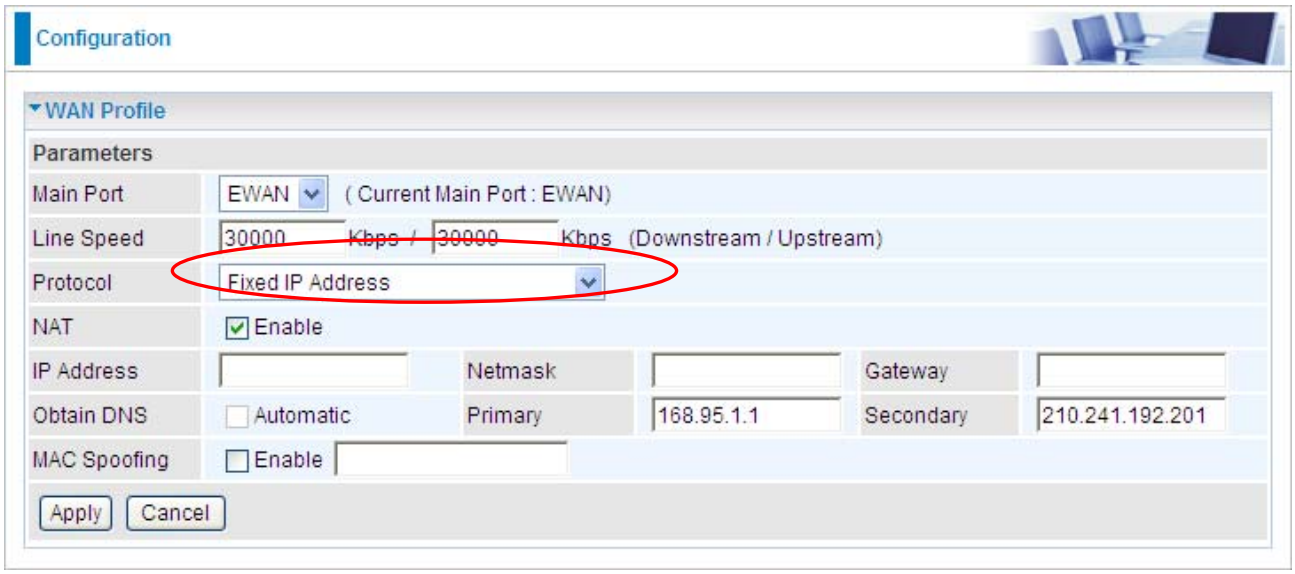
Obtain DNS Automatically: Select this check box to use DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the netmask.

MAC Spoofing: Select Enable and enter a MAC address that will temporarily change your router's MAC address to the one you have specified in this field. Leave it as Disabled if you do not wish to change the MAC address of your router.

Fixed IP Address (EWAN)

Select this option to set static IP information. You will need to enter in the Connection type, IP address, netmask, and gateway address, provided to you by your ISP. Each IP address entered in the fields must be in the appropriate IP form, which is four IP octets separated by a dot (x.x.x.x). The Router will not accept the IP address if it is not in this format.



Line Speed: Set the downstream and upstream of your connection in kilobytes per second. The connection speed is used by QoS settings.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account, sharing a single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.

IP Address: Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.

IP Netmask: The default is 0.0.0.0. User can change it to other such as 255.255.255.0.Type the netmask assigned to you by your ISP (if given).

Gateway: You must specify a gateway IP address (supplied by your ISP)

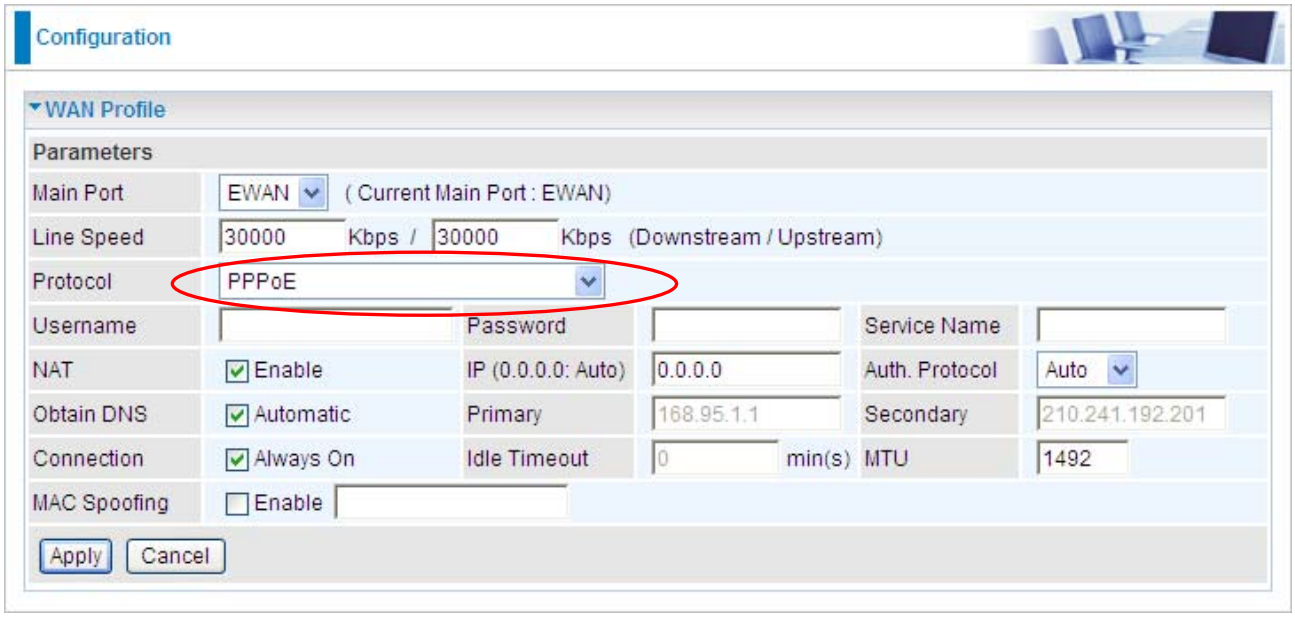
Obtain DNS Automatically: Select this check box to use DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the netmask.

MAC Spoofing: Select Enable and enter a MAC address that will temporarily change your router's MAC address to the one you have specified in this field. Leave it as Disabled if you do not wish to change the MAC address of your router.

PPPoE (EWAN)

PPPoE (PPP over Ethernet) provides access control in a manner similar to dial-up services using PPP.



Line Speed: Set the downstream and upstream of your connection in kilobytes per second. The connection speed is used by QoS settings.

Username: Enter the username provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive). This is in the format of “username@ispname” instead of simply “username”.

Password: Enter the password provided by your ISP. You can input up to **128** alphanumeric characters (case sensitive).

Service Name: Enter a name for this connection.

NAT: The NAT (Network Address Translation) feature allows multiple users to access the Internet through a single IP account, sharing a single IP address. If users on your LAN have public IP addresses and can access the Internet directly, the NAT function can be disabled.

IP Address: Your WAN IP address. Leave this at 0.0.0.0 to automatically obtain an IP address from your ISP.

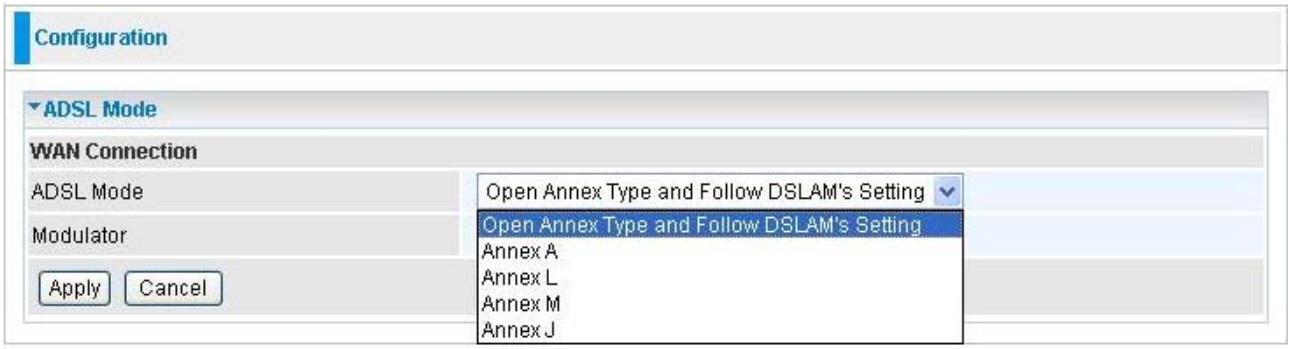
Auth. Protocol: Default is **Auto.** Your ISP advises on using **Chap** or **Pap.**

Obtain DNS Automatically: Select this check box to use DNS.

Primary DNS/ Secondary DNS: Enter the IP addresses of the DNS servers. The DNS servers are passed to the DHCP clients along with the IP address and the subnet mask.

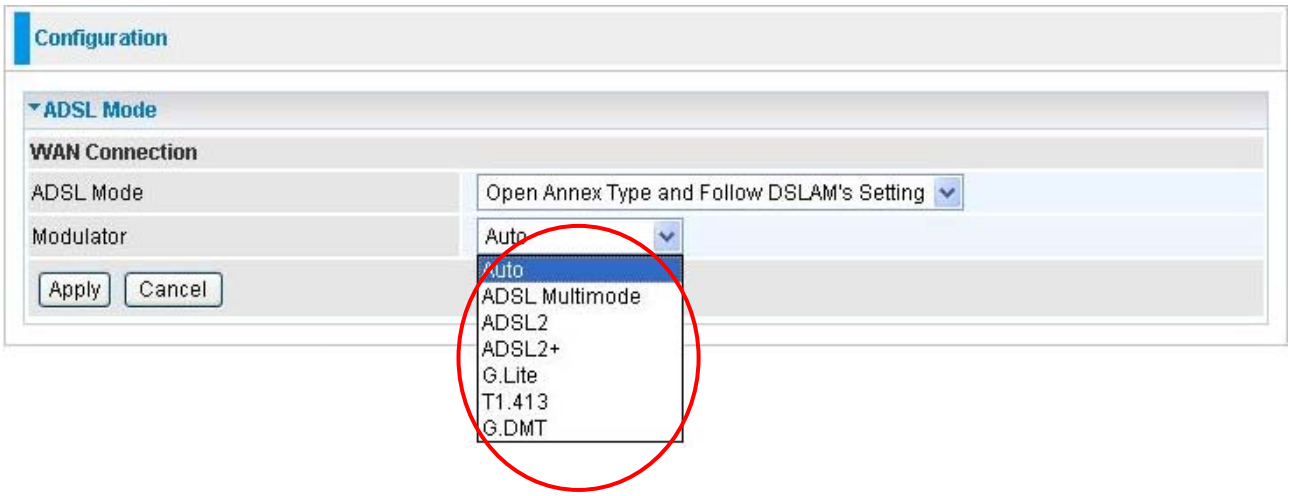
MAC Spoofing: Select Enable and enter a MAC address that will temporarily change your router’s MAC address to the one you have specified in this field. Leave it as Disabled if you do not wish to change the MAC address of your router.

5.3.2.3 ADSL Mode



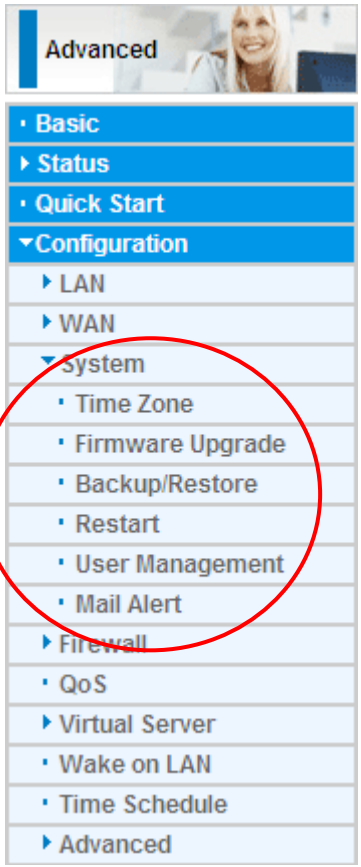
ADSL Mode: There are four modes "**Open Annex Type and Follow DSLAM's Setting**", "**Annex A**", "**Annex L**", "**Annex M**" and **"Annex J"** that user can select for this connection.

Modulator: There are seven modes "**AUTO**","**ADSL multimode**","**ADSL2**","**ADSL2+**", **"G.Lite:**", **"T1.413"** and **"G.DMT"** that user can select for this connection.

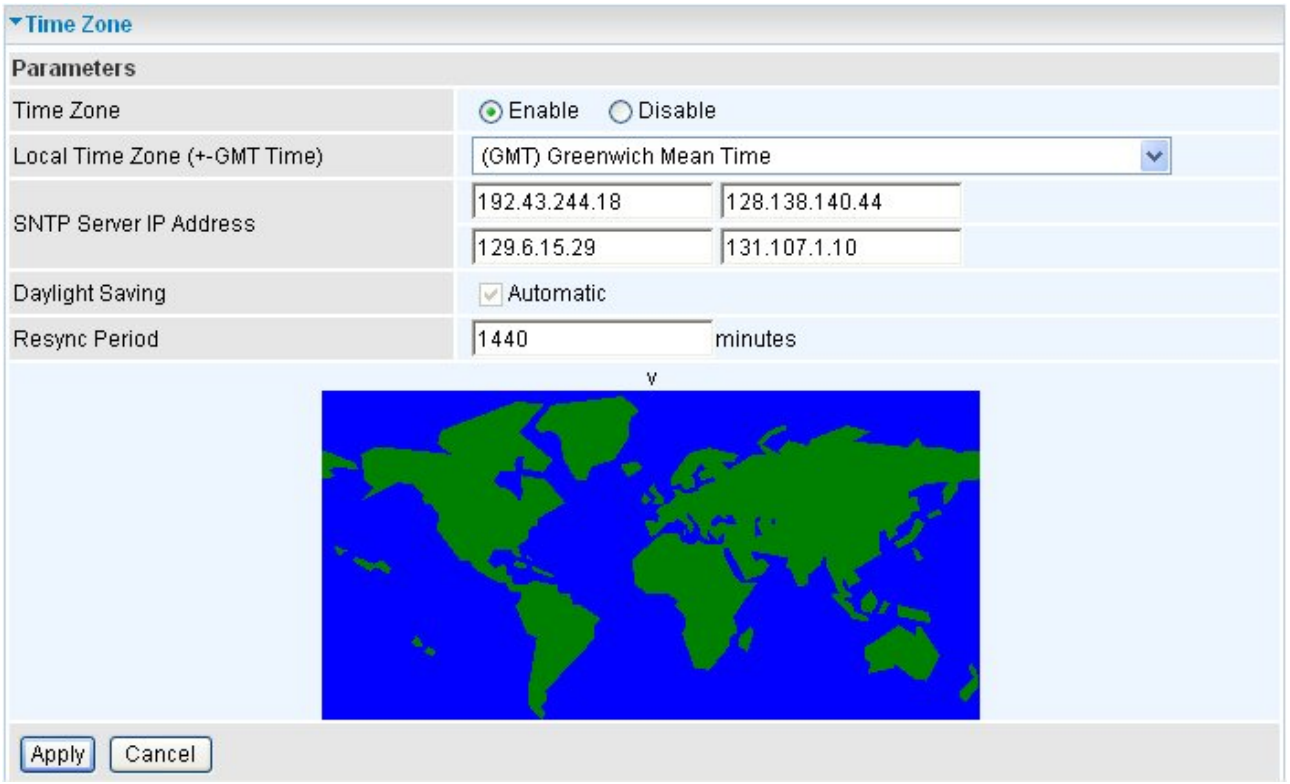


5.3.3 System

There are five items within the **System** section: **Time Zone, Firmware Upgrade, Backup/Restore, Restart**, **User Management** and **Mail Alert.**



5.3.3.1 Time Zone



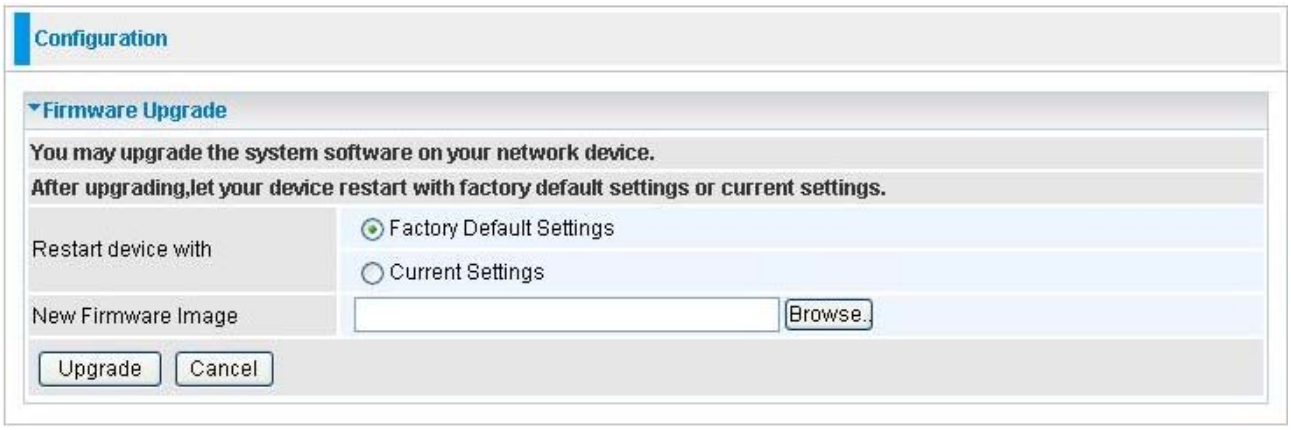
The router does not have a real time clock on board; instead, it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server outside your network. Choose your local time zone, click **Enable** and click the **Apply** button. After a successful connection to the Internet, the router retrieves the correct local time from the SNTP server you have specified. If you prefer to specify an SNTP server other than those in the drop-down list, simply enter its IP address as shown above. Your ISP may provide an SNTP server for you to use.

Resync Period (in minutes) is the periodic interval the router waits before it resynchronizes the router's time with that of the specified SNTP server. To avoid unnecessarily increasing the load on your specified SNTP server you should keep the poll interval as high as possible – at the absolute minimum every few hours or even days.

5.3.3.2 Firmware Upgrade

Your router's "firmware" is the software that allows it to operate and provides all its functionality. Think of your router as a dedicated computer, and the firmware as the software it runs. Over time this software may be improved and modified. Your router allows you to upgrade the software it runs to take advantage of these changes.

Clicking on **Browse** allows you to select the new firmware image file you have downloaded to your PC. Once the correct file is selected, click Upgrade to update the firmware in your router.



Restart Device with: To choose "Factory Default Settings" or "Current Settings" which uses your current setting on the new firmware (it is highly advised to use Factory Default Settings over Current Settings for a clean firmware upgrade).

New Firmware Image: Type in the location of the file you wish to upload in this field or click **Browse…** to locate it.

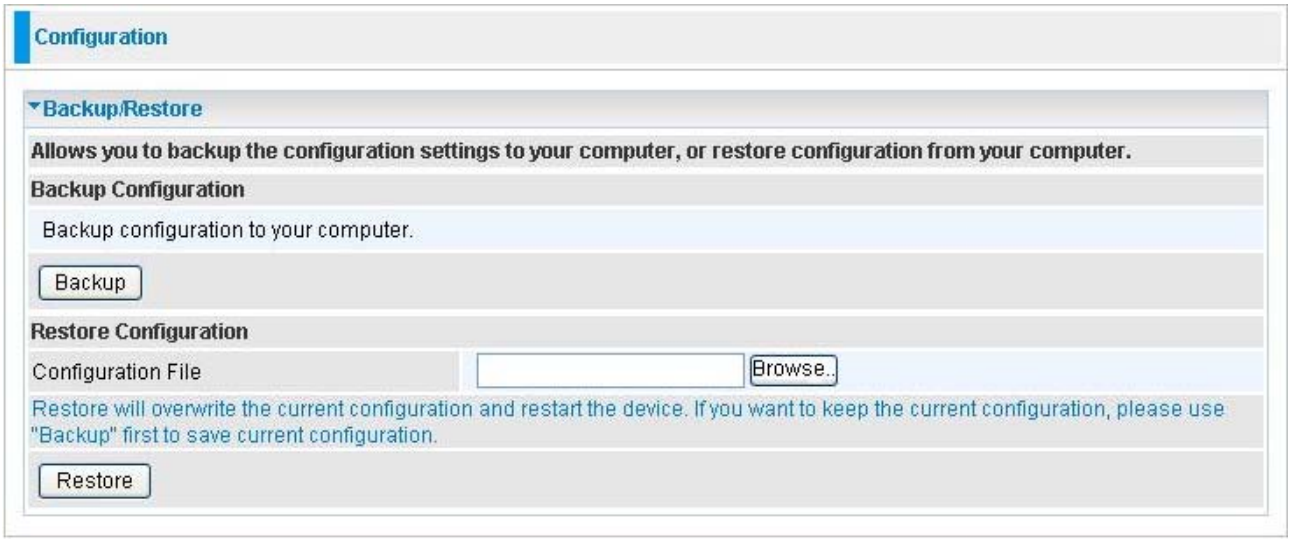
Browse…: Click **Browse…** to find the file with the **.afw** file extension that you wish to upload. Remember that you must decompress compressed (.zip) files before you can upgrade from the file.

Upgrade: Click **upgrade** to begin the upload process. This process may take up to three minutes.

Warning

DO NOT power down the router or interrupt the firmware upgrade while it is still in process. Improper operation may damage the router. Please see section 2.4 for emergency recovery procedures.

5.3.3.3 Backup / Restore


Configuration
Backup/Restore
Allows you to backup the configuration settings to your computer, or restore configuration from your computer.
Backup Configuration
Backup configuration to your computer.
Backup
Restore Configuration
Configuration File
Browse..
Restore will overwrite the current configuration and restart the device. If you want to keep the current configuration, please use "Backup" first to save current configuration.
Restore

These functions allow you to save and backup your router's current settings to a file on your PC, or to restore a previously saved backup. This is useful if you wish to experiment with different settings, knowing that you have a backup handy in the case of any mistakes. It is advisable to backup your router's settings before making any significant changes to your router's configuration.

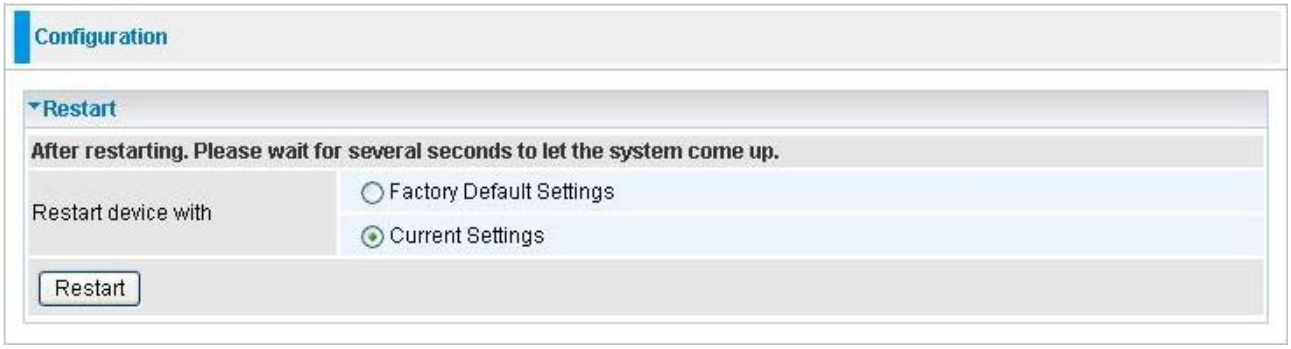
Press **Backup** to select where on your local PC to save the settings file. You may also change the name of the file when saving if you wish to keep multiple backups.

Press **Browse…** to select a file from your PC to restore. You should only restore settings files that have been generated by the Backup function, and that were created when using the **current version** of the router's firmware. **Settings files saved to your PC should not be manually edited in any way.**

Select the settings files you wish to use, and press **Restore** to load those settings into the router.

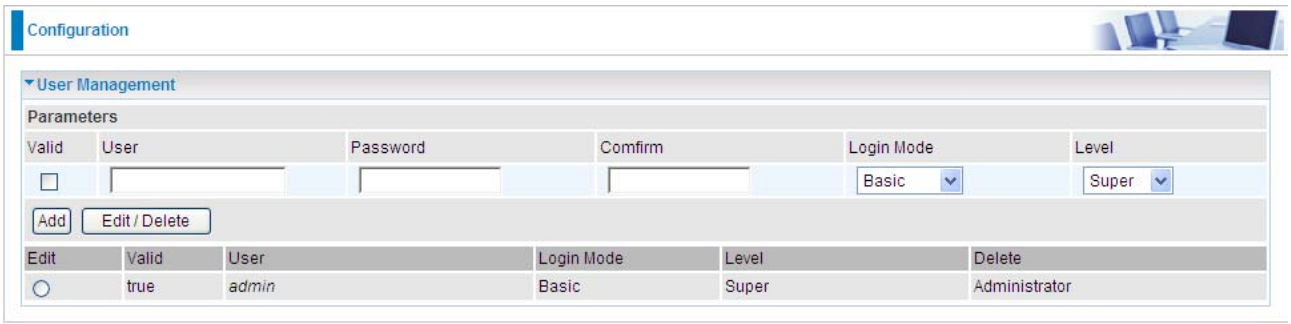
5.3.3.4 Restart Router

Click **Restart** with option **Current Settings** to reboot your router and save the current configuration to device.



If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select ***Factory Default Settings*** to reset to factory default settings.

5.3.3.5 User Management



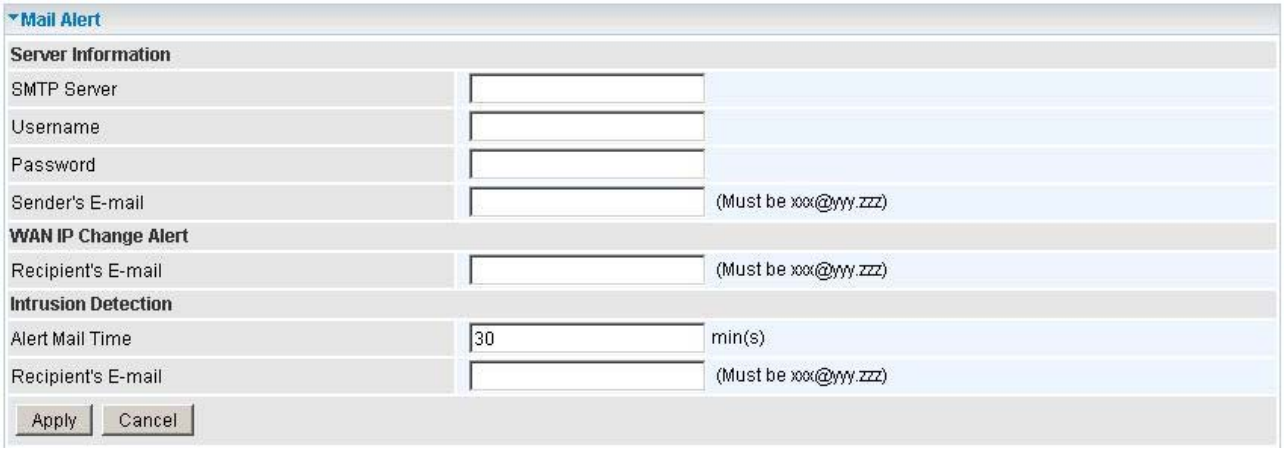
In order to prevent unauthorized access to your router's configuration interface, it requires all users to login with a password. You can set up multiple user accounts, each with their own password.

You are able to **Edit** existing users and **Add** new users who are able to access the device's configuration interface. Once you have clicked **Edit** on the account you want to edit**,** the information of the account will be displayed above. Just go ahead and change the password. You can change the user's **password**, whether their account is active and **Valid**. These options are the same when creating a user account, with the exception that once created you cannot change the username. You cannot delete the default admin account; however you can delete any other created accounts by clicking ticking the box under **Delete** and then press the **Edit/Delete** button.

You are strongly advised to change the password on the default "**admin**" account when you receive your router, and any time you reset your configuration to Factory Defaults.

5.3.3.6 Mail Alert

Send a log via email, if WAN IP is changed or if intruders accessing your computer without permission.

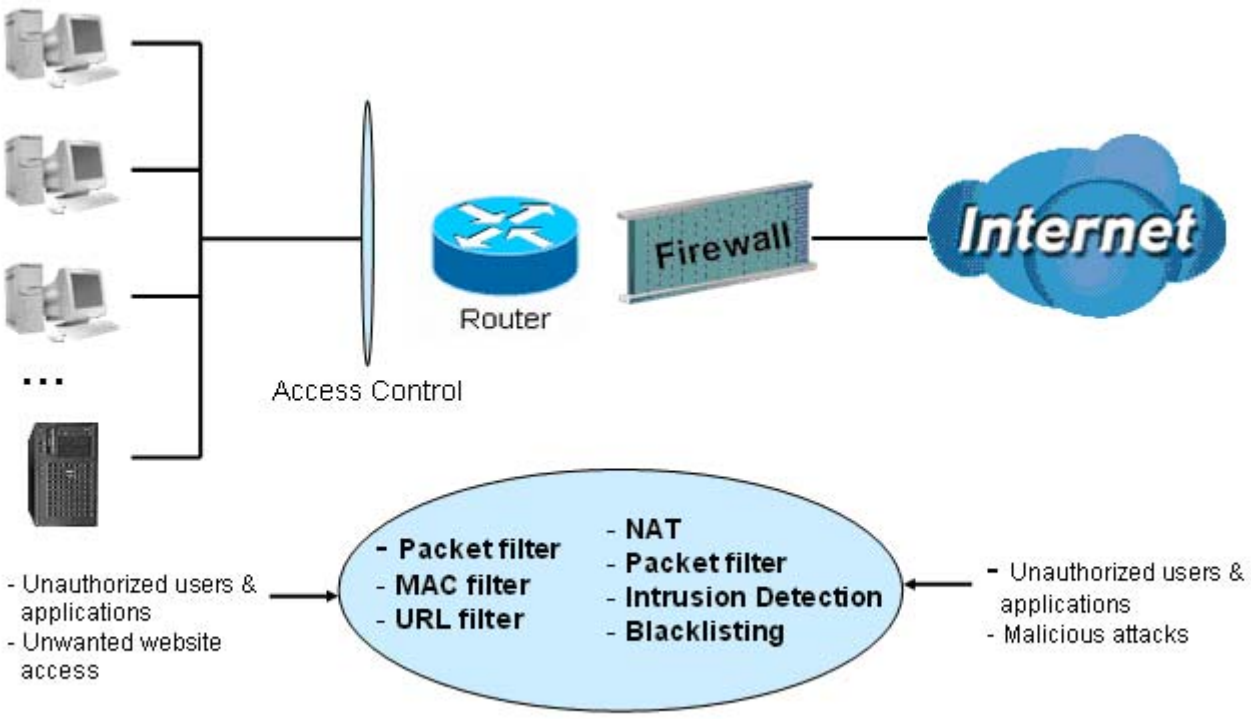


SMTP Server: Enter the SMTP server that you would like to use for sending emails.
Username: Enter the username of your email account to be used by the SMTP server.
Password: Enter the password of your email account.
Sender's Email: Enter your email address.
Recipient's Email (WAN IP Change Alert): Enter the email address that will receive the alert message once a computer / network server failover occurs.
Alert Mail Time (Intrusion Detection): The interval for sending alert mail.
Recipient's Email (Intrusion Detection): Enter the email address that will receive the alert message once intrusion has been detected.

5.3.4 Firewall

Firewall and Access Control

Your router includes a full SPI (Stateful Packet Inspection) firewall for controlling Internet access from your LAN, as well as helping to prevent attacks from hackers. In addition to this, when using NAT (Network Address Translation) the router acts as a "natural" Internet firewall, since all PCs on your LAN use private IP addresses that cannot be directly accessed from the Internet. See the **WAN** configuration section for more details on NAT.



Firewall & Filter

Firewall: Prevents access from outside your network.

NAT natural firewall: This masks LAN users' IP addresses, which are invisible to outside users on the Internet, making it much more difficult for a hacker to target a machine on your network. This natural firewall is on when the NAT function is enabled.

NOTE: When using Virtual Servers (port mapping) your PCs are exposed to the ports specified opened in your firewall packet filter settings.

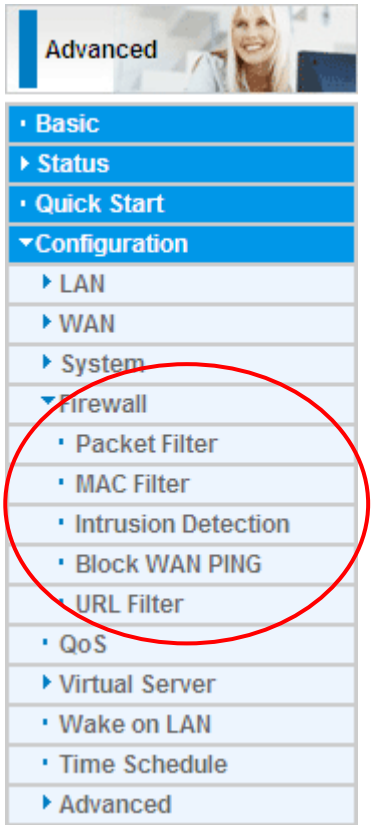
Firewall Security and Policy (General Settings): Inbound direction of Packet Filter rules prevent unauthorized computers or applications accessing your local network from the Internet.

Intrusion Detection: Enable Intrusion Detection to detect, prevent, and log malicious attacks.

MAC Filter rules: Prevents unauthorized computers accessing the Internet.

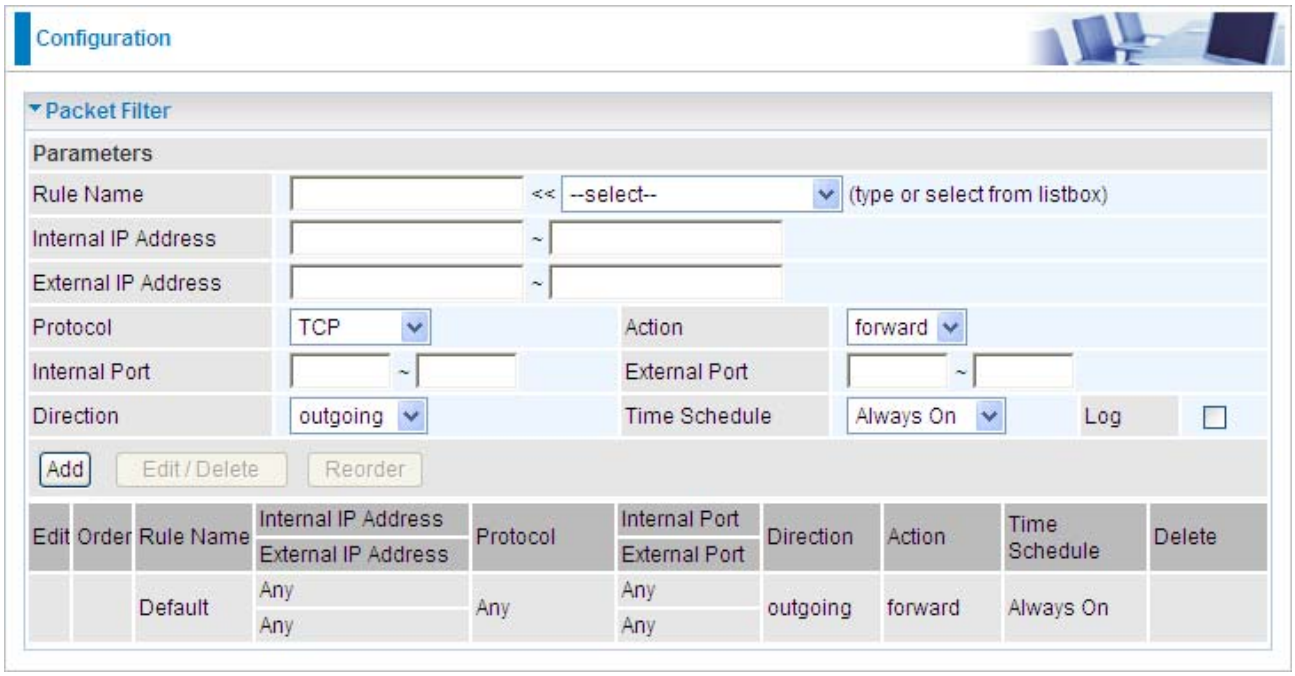
URL Filter: Blocks PCs on your local network from unwanted websites.

A detailed explanation of each of the following five items appears in the **Firewall** section below: **Packet Filter**, **MAC Address Filter, Intrusion detection, Block WAN PING** and **URL Filter.**



5.3.4.1 Packet Filter

Packet filtering enables you to configure your router to block specified internal/external users (**IP address**) from Internet access, or you can disable specific service requests (**Port number**) to /from Internet. This configuration program allows you to set up to 6 different filter rules for different users based on their IP addresses or their network Port number. The relationship among all filters is **"or"** operation, which means that the router checks these different filter rules one by one, starting from the first rule. As long as one of the rules is satisfied, the specified action will be taken.



- **Rule Name:** Users-define description to identify this entry. The maximum name length is 32 characters, and then can choose application that they want from listbox.
- **Internal IP Address / External IP Address:** This is the Address-Filter used to allow or block traffic to/from particular IP address(es). Input the range you want to filter out. If you leave empty or 0.0.0.0, it means any IP address.
- **Protocol:** Specify the packet type (TCP, UDP, ICMP, etc.) that the rule applies to.

Select **TCP** if you wish to search for the connection-based application service on the remote server using the port number. Or select **UDP** if you want to search for the connectionless application service on the remote server using the port number.

- **Action:** If a packet matches this filter rule, **Forward (allows the packets to pass)** or **Drop (disallow the packets to pass)** this packet.
- **Internal Port:** This Port or Port Range defines the ports allowed to be used by the Remote/WAN to connect to the application. Default is set from range **0 ~ 65535.** It is recommended that this option be configured by an advanced user.
- **External Port:** This is the Port or Port Range that defines the application.
- **Direction:** Determine whether the rule is for outgoing packets or for incoming packets.
- **Time Schedule:** It is self-defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to **Time Schedule** section.
- **Log:** Choose “log” if you wish to generate logs when the filer rule is applied to a packet.
- **Add:** Click this button to add a new packet filter rule and the added rule will appear at the bottom table.
- **Edit:** Check the Rule No. you wish to edit, and then click “Edit”.
- Delete: Check the Rule No. you wish to delete, and then click “Delete”.

Reorder: Be aware that packet filtering parameters appear in priority order i.e. the first one takes precedence over all other rules. There is a sort function next to the Rule Name column, you can move the rule to higher or lower priority by clicking the Order arrow, and press “Reorder” to save the new priority.

Edit	Order	Rule Name	Internal IP Address External IP Address	Protocol	Internal Port External Port	Direction	Action	Time Schedule	Delete
○	↓	FTP	Any Any	TCP	Any 21~21	outgoing	forward	Always On	☐
○	↑	HTTP	Any Any	TCP	Any 80~80	outgoing	forward	Always On	☐
		Default	Any Any	Any	Any Any	outgoing	forward	Always On	

Attention

If the DHCP server option is enabled, you must be very careful in assigning IP addresses of a filtered private IP range to avoid conflicts because you do not know which PC in the LAN is assigned which IP address. The easiest and safest way is that the filtered IP address is assigned to a specific PC that is not allowed to access an outside resource such as the Internet. You configure the filtered IP address manually for this PC, but it stays in the same subnet with the router.

5.3.4.2 MAC Filter

A MAC (Media Access Control) address is the unique network hardware identifier for each PC on your network’s interface (i.e. its Network Interface Card or Ethernet card). Using your router’s MAC Address Filter function, you can configure to block specific machines from accessing your LAN.

There are no pre-defined MAC address filter rules; you can add the filter rules to meet your requirements.

The format of MAC address could be: xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx.

Filter Action

Action: Select an action for MAC Filter. This feature is disabled by default. Check Allow or Block to activate the filter.

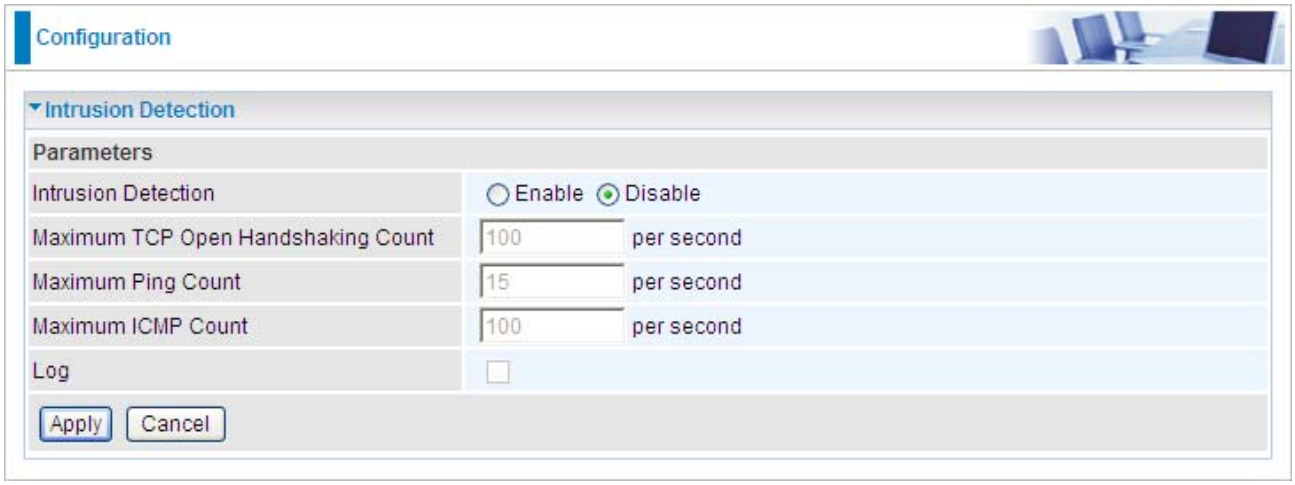
Parameters

MAC Address: Enter the ethernet MAC addresses you wish to have the filter rule applies.

Time Schedule: A self defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to Time Schedule section.

5.3.4.3 Intrusion Detection

Check Enable if you wish to detect intruders accessing your computer without permission. The router automatically detects and blocks a DoS (Denial of Service) attack if a user enables this function. This kind of attack is not to access confidential data on the network; instead, it aims to disrupt specific equipment or the entire network. If this happens, users will have trouble accessing the network resources.



Intrusion Detection: Check Enable if you wish to detect intruders accessing your computer without permission.

Maximum TCP Open Handshaking Count: This is a threshold value to decide whether a SYN Flood attempt is occurring or not. Default value is 100 TCP SYN per seconds.

Maximum Ping Count: This is a threshold value to decide whether an ICMP Echo Storm is occurring or not. Default value is 15 ICMP Echo Requests (PING) per second.

Maximum ICMP Count: This is a threshold to decide whether an ICMP flood is occurring or not. Default value is 100 ICMP packets per seconds except ICMP Echo Requests (PING).

Log: Check Log if you wish to generate logs when the filer rule is applied to the Intrusion Detection.

For SYN Flood, ICMP Echo Storm and ICMP flood, IDS will just warn the user in the Event Log but it will not be able to protect against such attacks.

Hacker attack types recognized by the IDS

Intrusion Name	Detect Parameter	Blacklist	Type of Block Duration	Drop Packet	Show Log
Ascend Kill	Ascend Kill data	Src IP	DoS	Yes	Yes
WinNuke	TCP Port 135, 137~139, Flag: URG	Src IP	DoS	Yes	Yes
Smurf	ICMP type 8 Des IP is broadcast	Dst IP	Victim Protection	Yes	Yes
Land attack	SrcIP = DstIP			Yes	Yes
Echo/CharGen Scan	UDP Echo Port and CharGen Port			Yes	Yes
Echo Scan	UDP Dst Port = Echo(7)	Src IP	Scan	Yes	Yes
CharGen Scan	UDP Dst Port = CharGen(19)	Src IP	Scan	Yes	Yes
X'mas Tree Scan	TCP Flag: X'mas	Src IP	Scan	Yes	Yes
IMAP SYN/FIN Scan	TCP Flag: SYN/FIN DstPort: IMAP(143) SrcPort: 0 or 65535	Src IP	Scan	Yes	Yes
SYN/FIN/RST/ACK Scan	TCP, No Existing session And Scan Hosts more than five.	Src IP	Scan	Yes	Yes
Net Bus Scan	TCP No Existing session DstPort = Net Bus 12345,12346, 3456	SrcIP	Scan	Yes	Yes
Back Orifice Scan	UDP, DstPort = Orifice Port (31337)	SrcIP	Scan	Yes	Yes
SYN Flood	Max TCP Open Handshaking Count (Default 100 c/sec)				Yes
ICMP Flood	Max ICMP Count (Default 100 c/sec)				Yes
ICMP Echo	Max PING Count (Default 15 c/sec)				Yes

Src IP: Source IP **Src Port:** Source Port

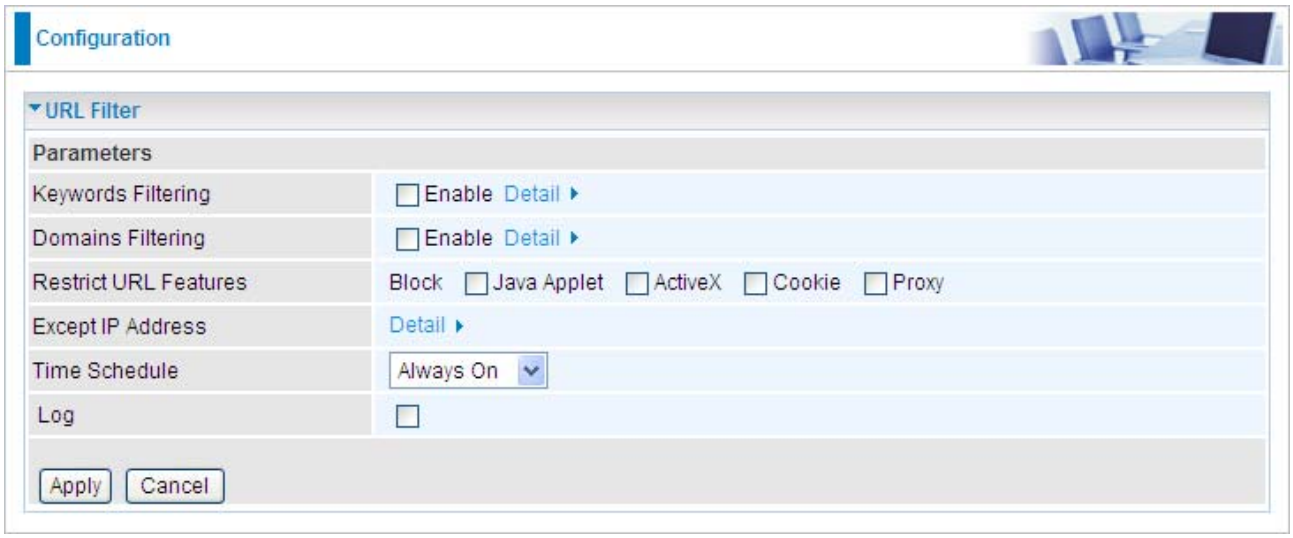
Dst Port: Destination Port Dst IP: Destination IP

5.3.4.4 Block WAN PING

Check Enable if you wish to exclude outside PING requests from reaching this router.

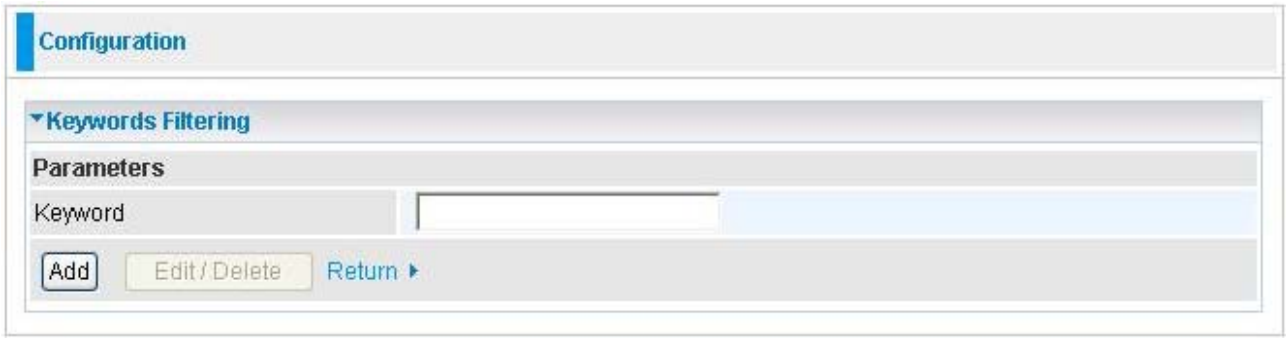
5.3.4.5 URL Filter

URL (Uniform Resource Locator – e.g. an address in the form of **http://www.example.com**) filter rules allow you to prevent users on your network from accessing particular websites from their URL. There are no pre-defined URL filter rules; you can add filter rules to meet your requirements.



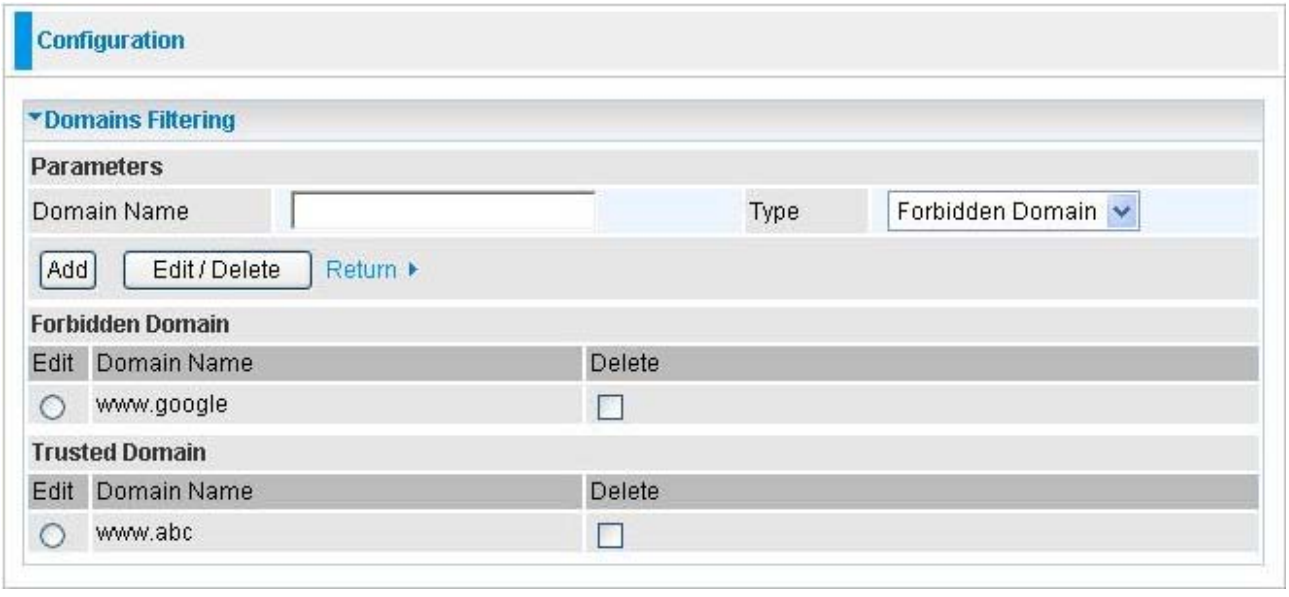
Keywords Filtering: Allows blocking by specific keywords within a particular URL rather than having to specify a complete URL (e.g. to block any image called “advertisement.gif”). When enabled, your specified keywords list is checked to see if any keywords are present in URLs accessed to determine if the connection attempt should be blocked. Note that the URL filter blocks web browser (HTTP) connection attempts using port 80 only.

For example, the URL http://www.abc.com/abcde.html would be dropped since the keyword “abcde” occurs in the URL.



Domains Filtering: Checks the domain name in URLs accessed against your list of domains to block or allow. If it matches, the URL request is sent (Trusted) or dropped (Forbidden). The checking procedure is:

1. Check the domain in the URL to determine if it is in the trusted list. If yes, the connection attempt is sent to the remote web server.
2. If not, it is checked with the forbidden list. If present, the connection attempt is dropped.
3. If the packet matches neither of the above, it is sent to the remote web server.
4. Please be note that the completed URL, “www” + domain name shall be specified. For example to block traffic to www.google.com.au, enter “www.google” or “www.google.com”



Restrict URL Features: This function enhances the restriction to your URL rules.

⊙ **Block Java Applet:** Blocks Web content which includes the Java Applet to prevent someone who wants to damage your system via the standard HTTP protocol.

⊙ Block ActiveX: Blocks ActiveX

⊙ Block Cookies: Blocks Cookies

⊙ Block Proxy: Blocks Proxy

● Except IP Address:

● **Time Schedule:** It is self-defined time period. You may specify a time schedule for your prioritization policy. For setup and detail, refer to Time Schedule section.

● **Log:** Click “Log” if you wish to generate logs when the filer rule is applied to the URL Filter.

5.3.5 QoS (Quality of Service)

Quality of Service Introduction

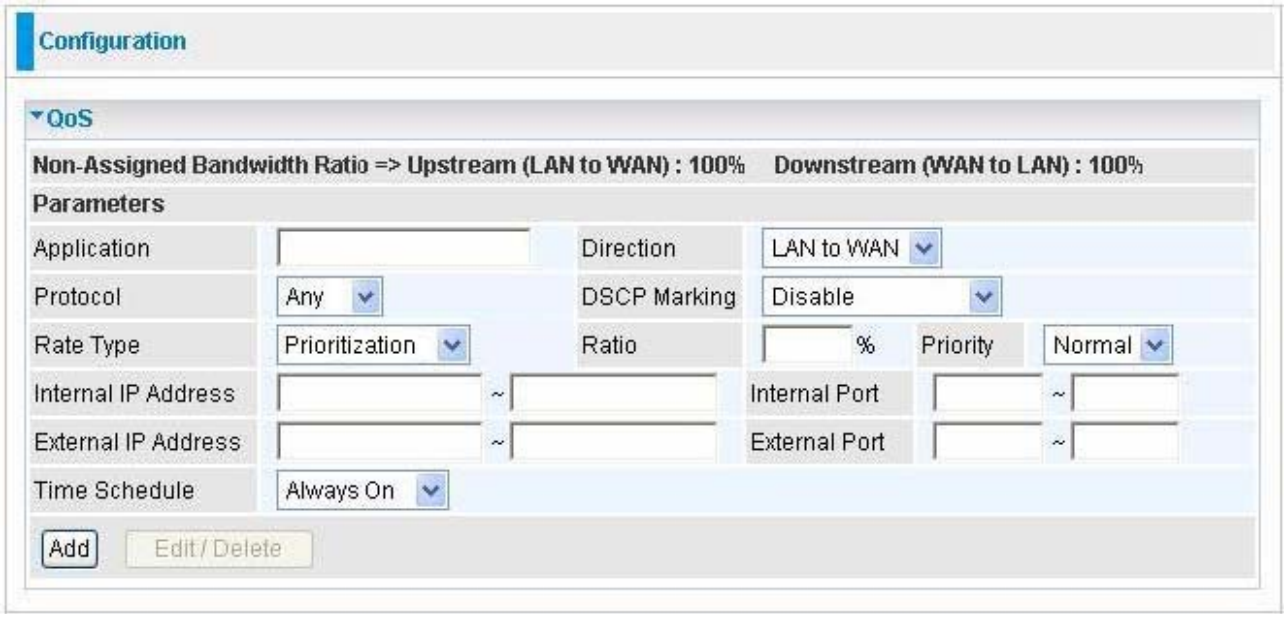
If you've ever found your 'net' speed has slowed to a crawl because another family member is using a P2P file sharing program, you'll understand why the Quality of Service features in the routers is such a breakthrough for home users and office users.

QoS: Keeping Your Net Connection Fast and Responsive

Configurable by internal IP address, external IP address, protocol, and port, the Quality of Service (QoS) gives you full control over which types of outgoing data traffic should be given priority by the router, ensuring bandwidth-consumption data like gaming packets, latency-sensitive application like voice, or even mission critical files, move through the router at lightning speed, even under heavy load. You can throttle the speed at which different types of outgoing data pass through the router. In addition, you can simply change the priority of different types of upload data and let the router sort out the actual speeds.

QoS Setup

Please choose the **QoS** in the **Configuration** item of the left window as depicted below.



After clicking the QoS item, you can Add/Edit/Delete a QoS policy. This page will show the brief information for policies you have added or edited. This page will also display the total available (Non-assigned) bandwidth, in percentage, can be assigned.

Application: A name that identifies an existing policy.

Direction: The traffic flow direction to be controlled by the QoS policy.
There are two settings to be provided in the Router:
⊙ **LAN to WAN:** You want to control the traffic flow from the local network to the outside world. e.g., you have a FTP server inside the local network and you want to have a limited traffic rate controlled by the QoS policy. So, you need to add a policy with LAN to WAN direction setting.
⊙ **WAN to LAN**: Control Traffic flow from the WAN to LAN. The connection maybe either issued from LAN to WAN or WAN to LAN.)
Protocol: The Protocol will be controlled. For GRE protocol, there is no need to specify the IP addresses or Application ports in this page. For other protocols, at least one value shall be given.

⊙ **ANY:** No protocol type is specified.
⊙ **TCP**
⊙ **UDP**
⊙ **ICMP**
⊙ **GRE:** For PPTP VPN Connections.

DSCP Marking: Differentiated Services Code Point (DSCP), it is the first 6 bits in the ToS byte. DSCP Marking allows users to classify traffic based on DSCP value and send packets to next Router.
Note: To be sure the router(s) in the backbones network have the capability in executing and checking the DSCP through-out the QoS network.

DSCP Mapping Table	
ADSL2+ Router	**Standard DSCP**
Disabled	None
Best Effort	Best Effort (000000)
Premium	Express Forwarding (101110)
Gold service (L)	Class 1, Gold (001010)
Gold service (M)	Class 1, Silver (001100)
Gold service (H)	Class 1, Bronze (001110)
Silver service (L)	Class 2, Gold (010010)
Silver service (M)	Class 2, Silver (010100)
Silver service (H)	Class 2, Bronze (010110)
Bronze service (L)	Class 3, Gold (011010)
Bronze service (M)	Class 3, Silver (011100)
Bronze service (H)	Class 3, Bronze (011110)

Rate Type: 2 types are provided:

⊙ **Limited (Maximum):** specify a limited data rate for this policy. It also is the maximal rate for this policy. When you choose Limited, type the Ratio proportion. As above FTP server example, you may want to “throttle” the outgoing FTP speed to 20% of 256K and limit to it, you may use this type.

⊙ **Prioritization:** to specify the rate type control for the rule to used. If you choose Prioritization for the rule, you parameter **Priority** would be available, you can set the priority for this rule.

Ratio: Assign the data ratio for this policy to be controlled. For examples, we want to only allow 20% of the total data transfer rate for the LAN-to-WAN direction to be used for FTP server. Then we can specify here with data ratio = 20. If you have ADSL LINE with 256K/bps.rate, the estimated data rate, in kbps, for this rule is 20%*256*0.9 = 46kbps. (For 0.9 is an estimated factor for the effective data transfer rate for a ADSL LINE from LAN to WAN. For WAN-to-LAN, it is 0.85 to 0.8).

Priority: Specify the priority for the bandwidth. You can specify which application can have higher priority to acquire the bandwidth.

- ⊙ **High**
- ⊙ **Normal**: The default is normal priority.
- ⊙ **Low**

For the sample priority assignment for different policies, it is served in a First-In-First-Out way.

Internal IP Address: The IP address values for Local LAN machines you want to control. (For IP packets from LAN to WAN, it is the source IP address. For IP packages from WAN to LAN, it is the destination IP address.)

Internal Port: The Application port values for local LAN machines you want to control. (For TCP/UDP packets from LAN to WAN, it is the source port value. For TCP/UDP packets from WAN to LAN, it is the destination port value.)

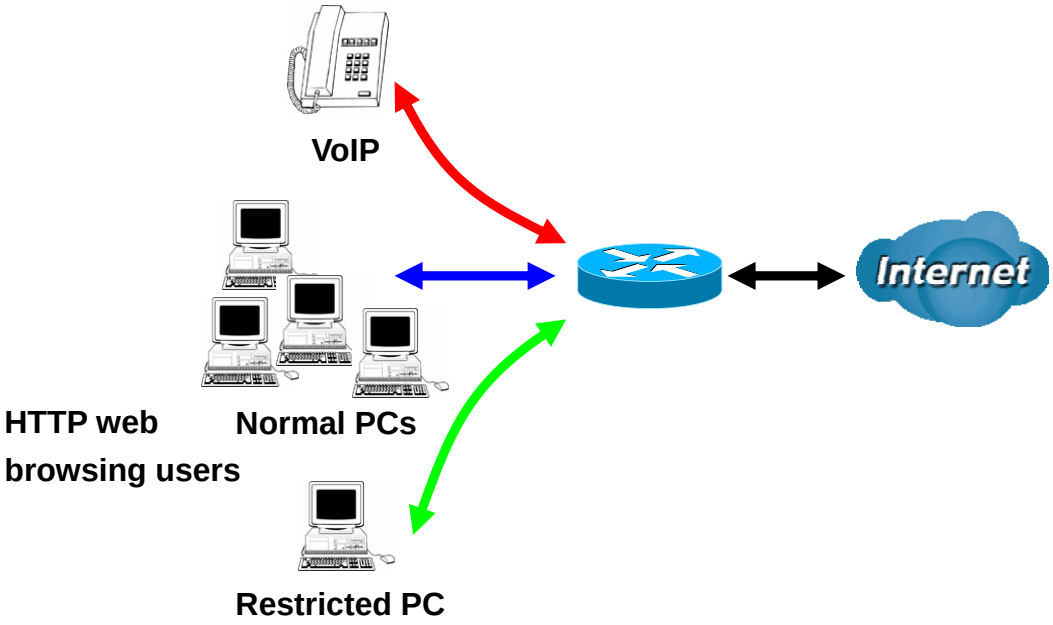
External IP Address: The IP address values for Remote WAN machines you want to control. (For IP packets from LAN to WAN, it is the destination IP address. For IP packages from WAN to LAN, it is the source IP address.)

External Ports: The Application port values for remote machines you want to control. (For TCP/UDP packets from LAN to WAN, it is the destination port value. For TCP/UDP packets from WAN to LAN, it is the source port value.)

Time Schedule: Scheduling your prioritization policy.

QoS example for your Network

Connection Diagram



ADSL Subscription Rate

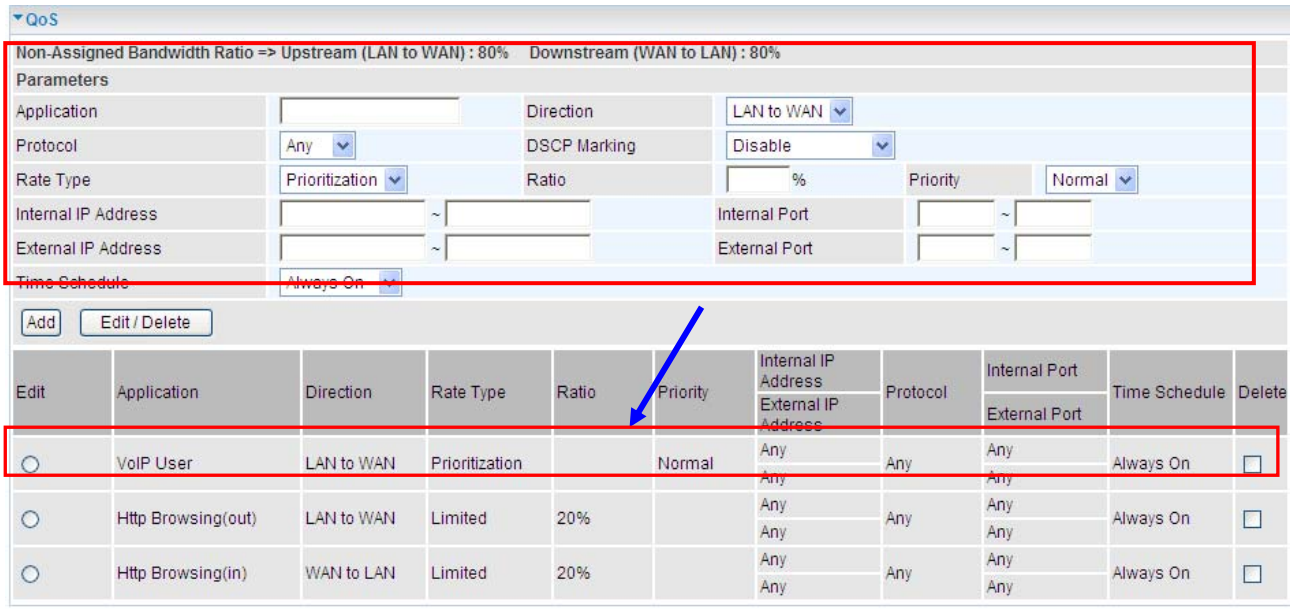
Upstream: 256 kbps

Downstream: 2048 Mbps

Example QoS Plan

Application	IP or Ports	Control Flow	Data Rate	Time Schedule
VoIP User	192.168.1.1	Outgoing	High priority for bandwidth with DSCP marking Class 1 Gold Service.	Always
HTTP web browsing users	80	Incoming and Outgoing	outgoing: limited 20%. Data rate. incoming: limited 20%. Data rate.	Always

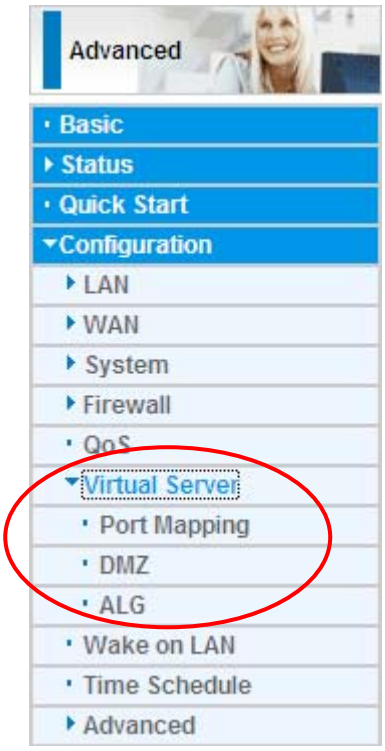
Example QoS Setup



VoIP application

Voice is latency-sensitive application. Most VoIP devices are used SIP protocol and the port number will be assigned by SIP module automatically. Better to use fixed IP address for catching VoIP packets as high priority.

5.3.6 Virtual Server



In TCP and UDP networks a port is a 16-bit number used to identify which application program (usually a server) incoming connections should be delivered to. Some ports have numbers that are pre-assigned to them by the IANA (the Internet Assigned Numbers Authority), and these are referred to as “well-known ports”. Servers follow the well-known port assignments so clients can locate them.

If you wish to run a server on your network that can be accessed from the WAN (i.e. from other machines on the Internet that are outside your local network), or any application that can accept incoming connections (e.g. Peer-to-peer/P2P software such as instant messaging applications and P2P file-sharing applications) and are using NAT (Network Address Translation), then you need to configure your router to forward these incoming connection attempts using specific ports to the PC on your network running the application. You also need to use port forwarding if you wish to host an online game server.

The reason is that when using NAT, your publicly accessible IP address is used by and points to your router, which needs to deliver all traffic to the private IP addresses used by your PCs. Please see the **WAN** configuration section of this manual for information on NAT.

The Internet Assigned Numbers Authority (IANA) is the central coordinator for the assignment of unique parameter values for Internet protocols. Port numbers range from 0 to 65535, but only port numbers 0 to 1023 are reserved for privileged services and are

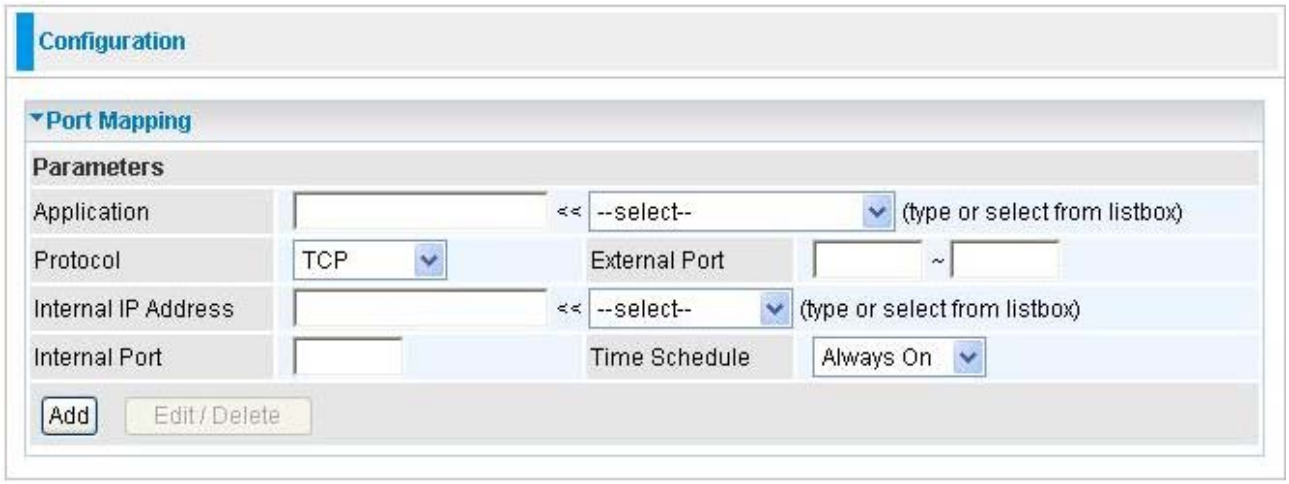
designated as “well-known ports”. The registered ports are numbered from 1024 through 49151. The remaining ports, referred to as dynamic ports, or private ports, are numbered from 49152 through 65535.

Examples of well-known and registered port numbers are shown below, for further information, please see IANA’s website at: http://www.iana.org/assignments/port-numbers

Well-known and Registered Ports

Port Number	**Protocol**	**Description**
20	TCP	FTP Data
21	TCP	FTP Control
22	TCP & UDP	SSH Remote Login Protocol
23	TCP	Telnet
25	TCP	SMTP (Simple Mail Transfer Protocol)
53	TCP & UDP	DNS (Domain Name Server)
69	UDP	TFTP (Trivial File Transfer Protocol)
80	TCP	World Wide Web HTTP
110	TCP	POP3 (Post Office Protocol Version 3)
119	TCP	NEWS (Network News Transfer Protocol)
123	UDP	NTP (Network Time Protocol)
161	TCP	SNMP
443	TCP & UDP	HTTPS
1503	TCP	T.120
1720	TCP	H.323
4000	TCP	ICQ
7070	UDP	RealAudio

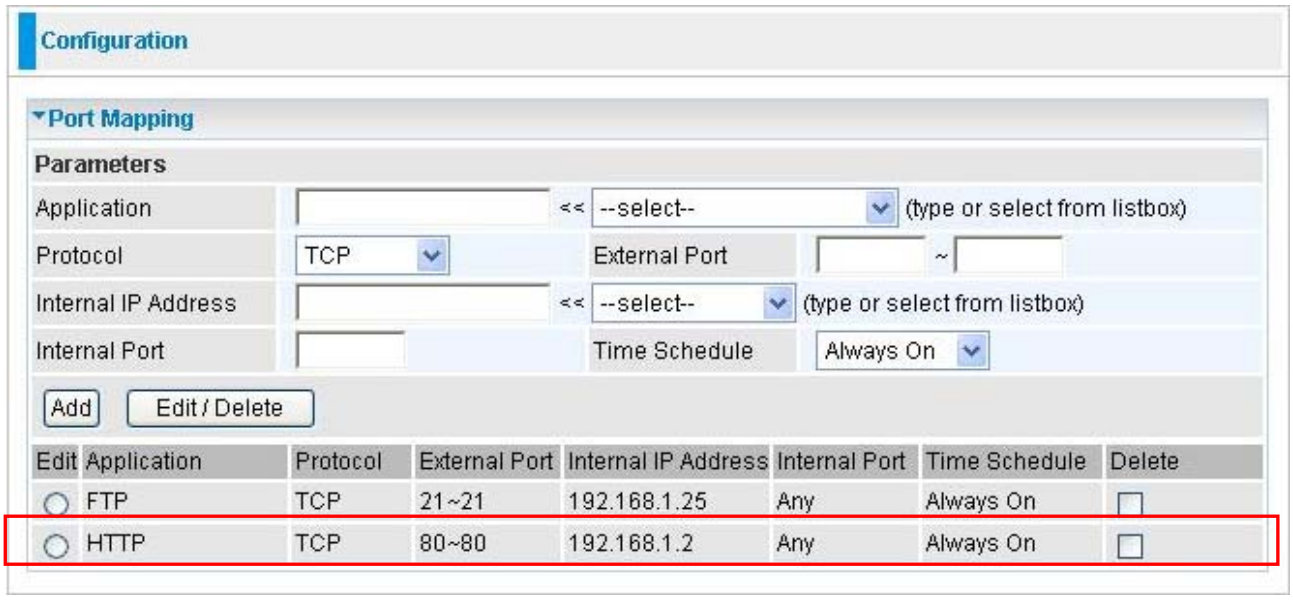
5.3.6.1 Port Mapping



- **Application:** Select the service you wish to configure
- **Protocol:** Automatic when you choose Application from listbox or select a protocol type which you want.
- **External Port & Internal Port:** Enter the public port number & range you wish to configure.
- **Internal IP Address:** Enter the IP address of a specific internal server to which requests from the specified port is forwarded.
- **Add:** Click to add a new virtual server rule. Click again and the next figure appears.
- **Edit:** Check the Rule No. you wish to edit and then click “Edit/Delete”.
- **Delete:** Check the Rule No. you wish to delete then click “Edit/Delete”.

Since NAT acts as a “natural” Internet firewall, your router protects your network from access by outside users, as all incoming connection attempts point to your router unless you specifically create Virtual Server entries to forward those ports to a PC on your network. When your router needs to allow outside users to access internal servers, e.g. a web server, FTP server, Email server or game server, the router can act as a “virtual server”. You can set up a local server with a specific port number for the service to use, e.g. web/HTTP (port 80), FTP (port 21), Telnet (port 23), SMTP (port 25), or POP3 (port 110). When an incoming access request to the router for a specified port is received, it is forwarded to the corresponding internal server.

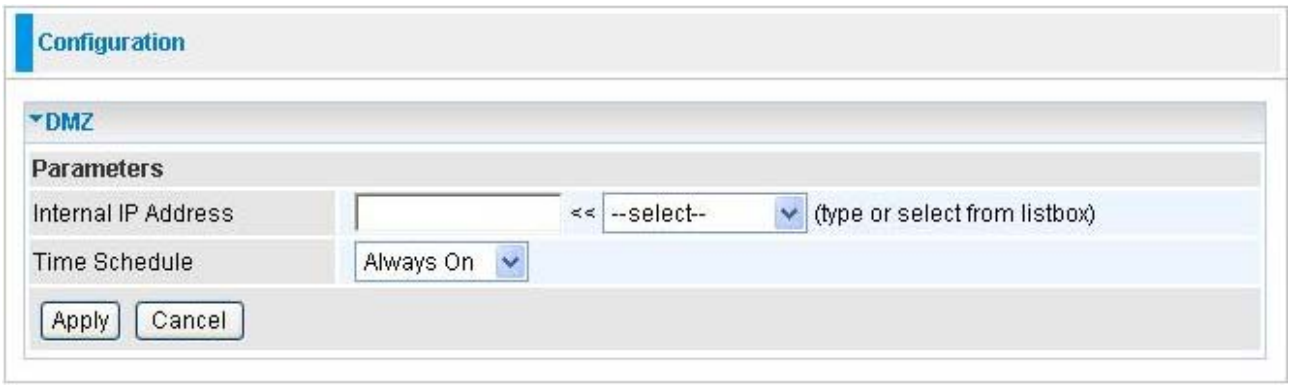
For example, if you set the port number 80 (Web/HTTP) to be mapped to the IP Address 192.168.1.2, then all incoming HTTP requests from outside users are forwarded to the local server (PC) with the IP address of 192.168.1.2. If the port is not listed as a predefined application, you need to add it manually.



In addition to specifying the port number used, you also need to specify the protocol used. The protocol is determined by the particular application. Most applications use TCP or UDP, however you can specify other protocols using the drop-down **Protocol** menu. Setting the protocol to “all” causes all incoming connection attempts using all protocols on all port numbers to be forwarded to the specified IP address.

5.3.6.2 DMZ

DMZ: The DMZ Host is a local computer exposed to the Internet. When setting a particular internal IP address as the DMZ Host, all incoming packets are checked by the Firewall and NAT algorithms, it is then passed to the DMZ host when a packet received does not use a port number in use by any other Virtual Server entries.



5.3.6.3 ALG

Controls enable or disable various protocols over application layer.

For example, SIP ALG:

Enable: When SIP phone need ALG to pass through the NAT.

Disable: When SIP phone included NAT-Traversal algorithm. Turn off the SIP ALG.

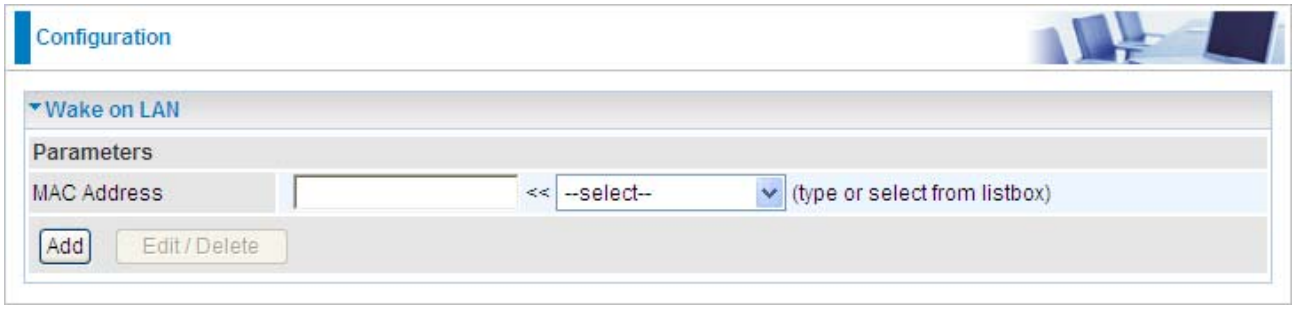
Using port mapping does have security implications, since outside users are able to connect to PCs on your network. For this reason you are advised to use specific Virtual Server entries just for the ports your application requires instead of simply using DMZ or creating a Virtual Server entry for “All” protocols, as doing so results in all connection attempts to your public IP address accessing the specified PC.

Attention

1. If you disable the NAT option in the WAN-ISP section, the Virtual Server function becomes invalid.
2. If the DHCP server option is enabled, you have to be very careful in assigning the IP addresses of the virtual servers in order to avoid conflicts. The easiest way of configuring Virtual Servers is to manually assign a static IP address to each virtual server PC, with an address that does not fall into the range of IP addresses that are issued by the DHCP server. You can configure the virtual server IP address manually, but it must still be in the same subnet as the router.

5.3.7 Wake on LAN

This feature provides greater flexibility for users to turn on / boot the computer of the network from a remotely site.



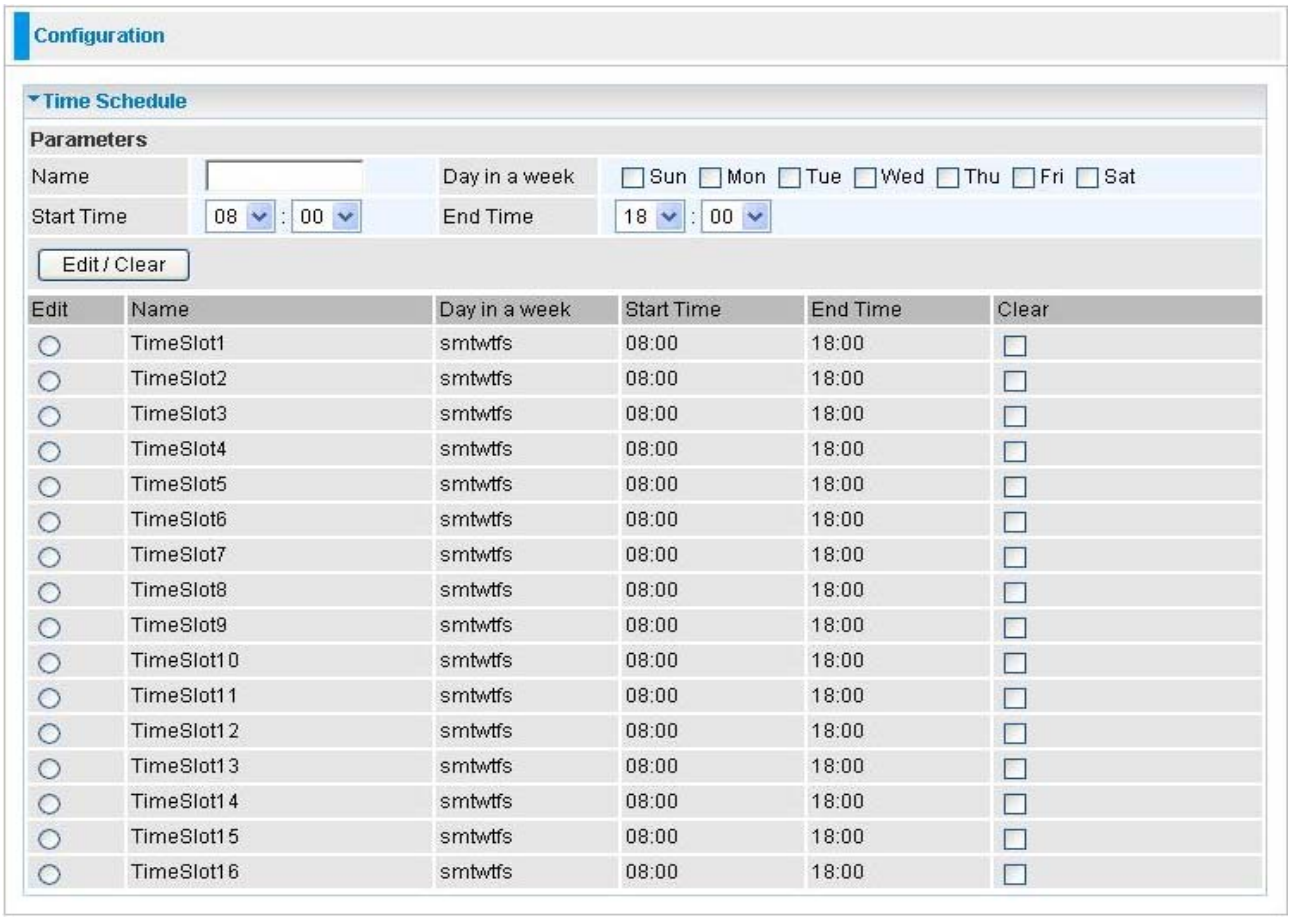
MAC Address: Enter the MAC address of the target computer or you can select the MAC address directly from the Select drop down menu on the right.

: You can select the MAC from this list.

5.3.8 Time Schedule

The Time Schedule supports up to 16 time slots which helps you to manage your Internet connection. In each time profile, you may schedule specific day(s) i.e. Monday through Sunday to restrict or allowing the usage of the Internet by users or applications.

This Time Schedule correlates closely with router's time, since router does not have a real time clock on board; it uses the Simple Network Time Protocol (SNTP) to get the current time from an SNTP server from the Internet. Refer to **Time Zone** for details. You router time should correspond with your local time. If the time is not set correctly, your Time Schedule will not function properly.

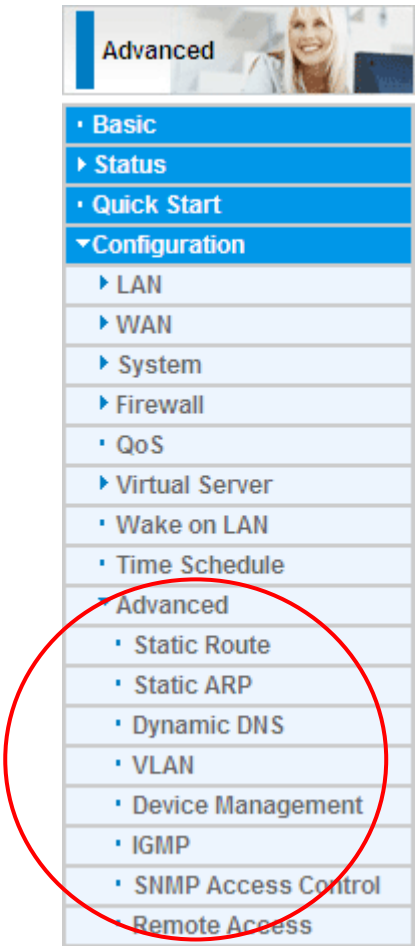


- **Name:** A user-define description to identify this time portfolio.
- **Day in a week:** The default is set from Sunday through Saturday. You may specify the days for the schedule to be applied.
- **Start Time:** The default is set at 8:00 AM. You may specify the start time of the schedule.
- **End Time:** The default is set at 18:00 (6:00PM). You may specify the end time of the schedule. Select the **Apply** button to apply your changes.

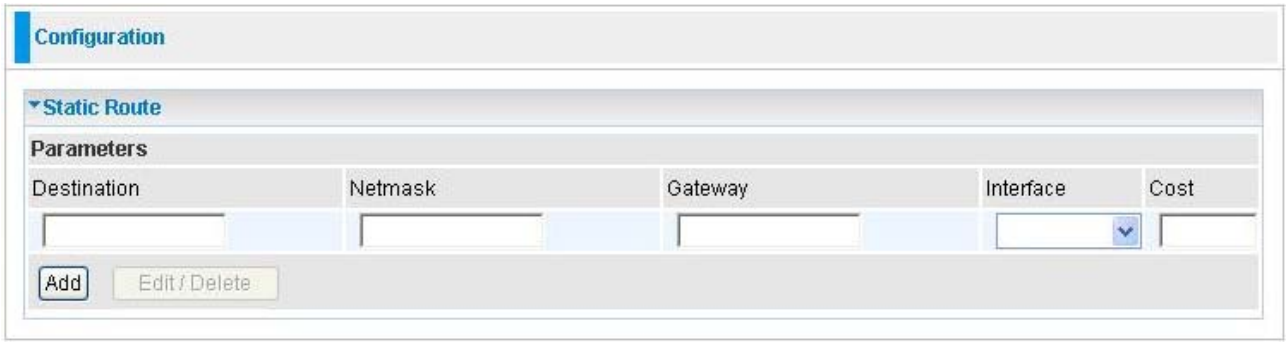
5.3.9 Advanced

Configuration options within the **Advanced** section are for users who wish to take advantage of the more advanced features of the router. Users who do not understand the features should not attempt to reconfigure their router, unless advised to do so by support staff.

There are seven items within the **Advanced** section: **Static Route, Static ARP, Dynamic DNS, VLAN, Device Management, IGMP, SNMP Access Control** and **Remote Access.**



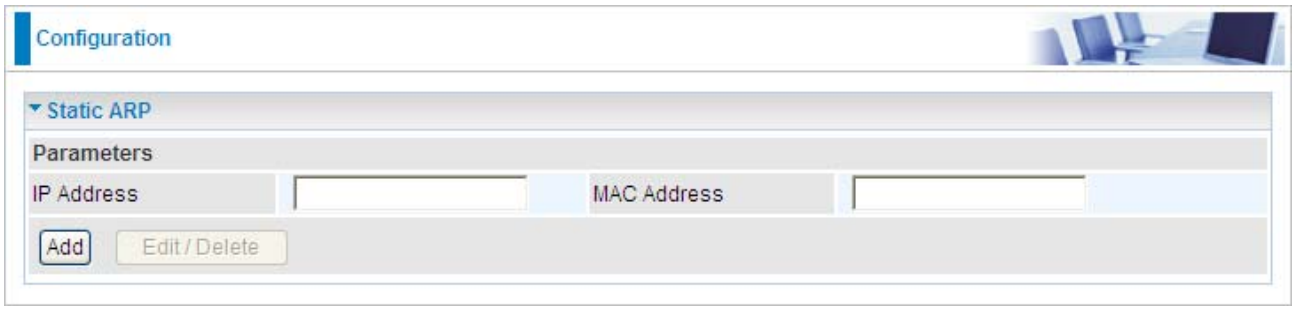
5.3.9.1 Static Route



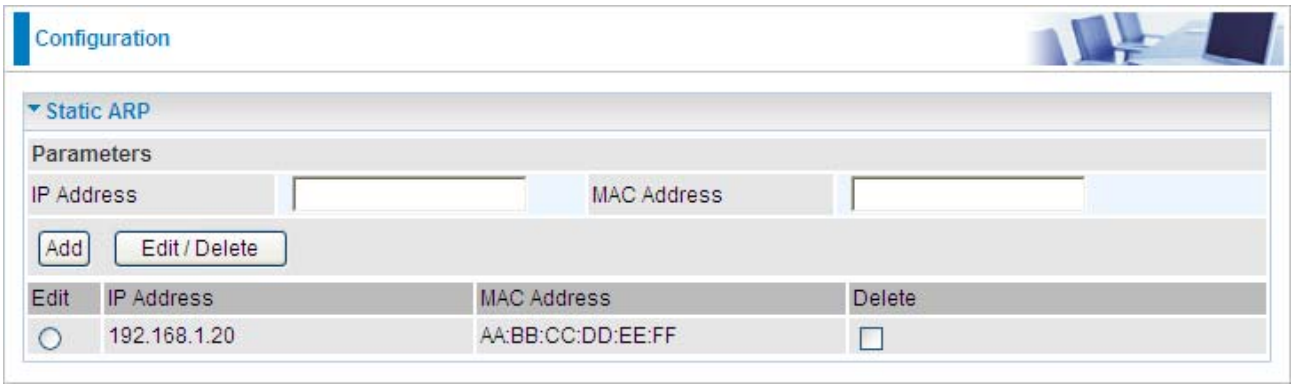
- **Destination:** The destination subnet IP address.
- **Netmask:** Subnet mask of the destination IP addresses based on above destination.
- **Gateway:** The gateway IP address to which packets are forwarded.
- **Interface:** Select the interface through which packets are forwarded.
- **Cost:** Represents the cost of transmission for routing purposes. The number need not be precise, but it must be between 0 and 65535.

5.3.9.2 Static ARP

This feature allows you to map the layer-2 MAC (Media Access Control) address that corresponds to the layer-3 IP address of the device.



IP Address: Enter the IP of the device that the corresponding MAC address will be mapped to.
MAC Address: Enter the MAC address that corresponds to the IP address of the device. Click Add to confirm the settings.
Edit: Check the Edit radio button to display the parameter of the selected application, then after changing the parameters click the "Edit/Delete" button to apply the changes.

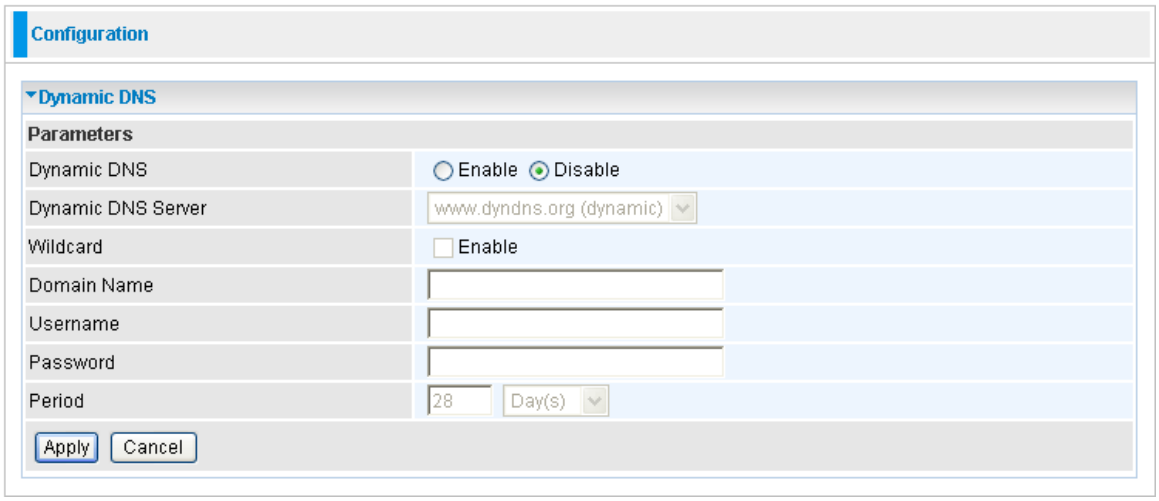


Delete: To remove a static ARP entry, check the Delete box of the selected entry then click the "Edit/Delete" button.

5.3.9.3 Dynamic DNS

The Dynamic DNS function lets you alias a dynamic IP address to a static hostname, so if your ISP does not assign you a static IP address you can still use a domain name. This is especially useful for hosting servers via your ADSL connection, so that anyone wishing to connect to you may use your domain name, rather than having to use your dynamic IP address, which changes from time to time. This dynamic IP address is the WAN IP address of the router, which is assigned to you by your ISP.

You first need to register and establish an account with the Dynamic DNS provider using their web site, for example http://www.dyndns.org/

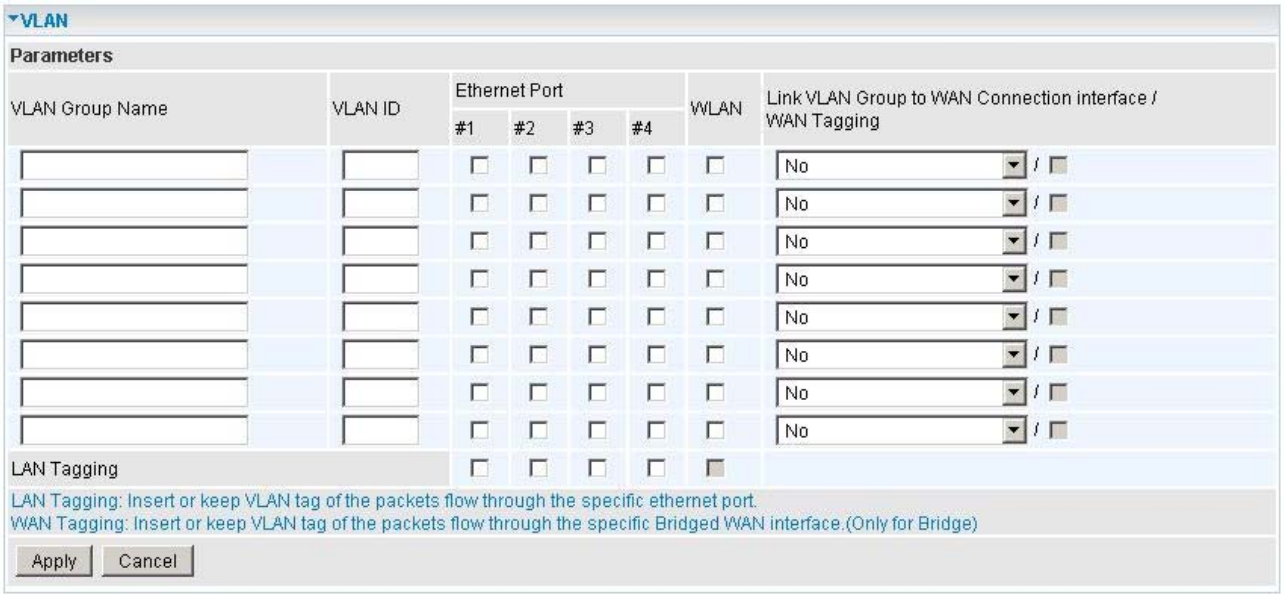


- **Disable:** Check to disable the Dynamic DNS function.
- **Enable:** Check to enable the Dynamic DNS function. The fields following are activated and required.
- **Dynamic DNS Server:** Select the DDNS service you have established an account with.
- **Wildcard:** Select this check box to enable the DYNDNS Wildcard.
- **Domain Name, Username and Password:** Enter your registered domain name and your username and password for this service.

Period: Set the time period between updates, for the Router to exchange information with the DDNS server. In addition to updating periodically as per your settings, the router will perform an update when your dynamic IP address changes. If the period is 0, the router will check the DNS server every 5 min.

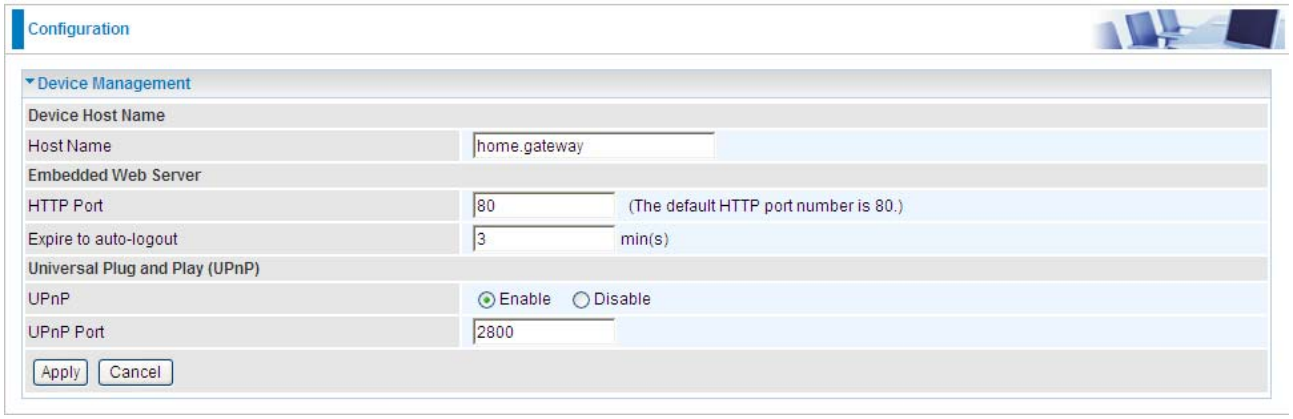
5.3.9.4 VLAN

VLAN (Virtual Local Area Network) is a group of devices on different physical LAN segments that can communicate with each other as if they were all on the same physical LAN segment.



5.3.9.5 Device Management

The Device Management advanced configuration settings allow you to control your router's security options and device monitoring features.



Embedded Web Server:

HTTP Port: The port number of the router's embedded web server (for web-based configuration uses. The default value is the standard HTTP port, 80. You may specify an alternative if, for example, you are running a web server on a PC within your LAN.

For Example: User A changes HTTP port number to **100**, specifies their own IP address of **192.168.1.55**, and sets the logout time to be **100** minutes. The router only allows User A access from the IP address **192.168.1.55** to logon to the Web GUI by typing: **http://192.168.1.254:100** in their web browser. After 100 minutes, the device automatically logs out User A.

Universal Plug and Play (UPnP):

UPnP offers peer-to-peer network connectivity for PCs and other network devices, along with control and data transfer between devices. UPnP offers many advantages for users running NAT routers through UPnP NAT Traversal, and on supported systems makes tasks such as port forwarding much easier by letting the application control the required settings, removing the need for the user to control advanced configuration of their device.

Both the user's Operating System and the relevant application must support UPnP in addition to the router. Windows XP and Windows Me natively support UPnP (when the component is installed), and Windows 98 users may install the Internet Connection Sharing client from Windows XP in order to support UPnP. Windows 2000 does not support UPnP.

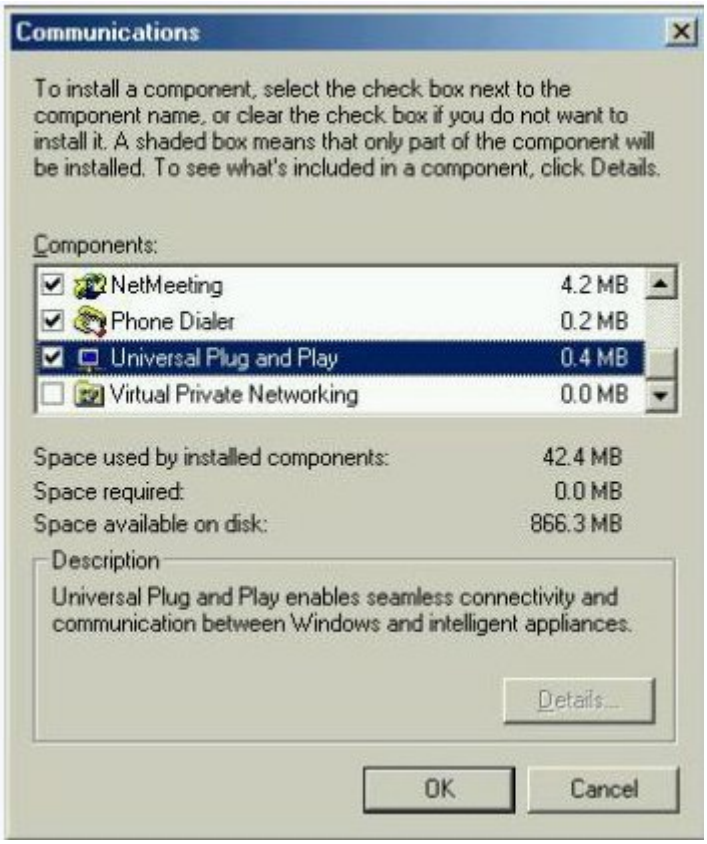
Disable: Check to disable the router's UPnP functionality.
Enable: Check to enable the router's UPnP functionality.
UPnP Port: The Default setting is 2800. It is highly recommended you use this port value. If this value conflicts with other ports already in use you may wish to change the port.

Installing UPnP in Windows Example

Follow the steps below to install the UPnP in Windows Me.
Step 1: Click Start and Control Panel. Double-click Add/Remove Programs.
Step 2: Click on the Windows Setup tab and select Communication in the Components selection box. Click Details.

Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To add or remove a component, select or clear the check box. If the check box is shaded, only part of the component will be installed. To see what's included in a component, click Details.
Components:
Accessibility 0.0 MB
Accessories 13.8 MB
Address Book 1.5 MB
Communications 7.0 MB
Desktop Themes 5.9 MB
Space used by installed components: 42.8 MB
Space required: 0.0 MB
Space available on disk: 2574.4 MB
Description
Includes accessories to help you connect to other computers and online services.
5 of 9 components selected
Details...
Have Disk...
OK
Cancel
Apply

Step 3: In the Communications window, select the Universal Plug and Play check box in the Components selection box.


Communications
To install a component, select the check box next to the component name, or clear the check box if you do not want to install it. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Components:
NetMeeting 4.2 MB
Phone Dialer 0.2 MB
Universal Plug and Play 0.4 MB
Virtual Private Networking 0.0 MB
Space used by installed components: 42.4 MB
Space required: 0.0 MB
Space available on disk: 866.3 MB
Description
Universal Plug and Play enables seamless connectivity and communication between Windows and intelligent appliances.
Details...
OK
Cancel

Step 4: Click OK to go back to the Add/Remove Programs Properties window. Click Next.

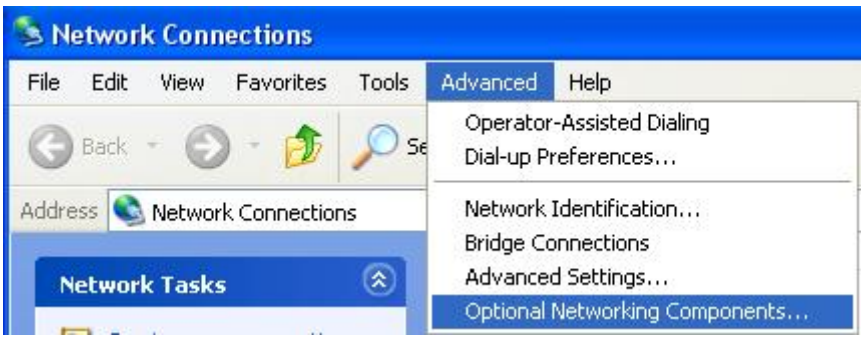
Step 5: Restart the computer when prompted.

Follow the steps below to install the UPnP in Windows XP.

Step 1: Click Start and Control Panel.

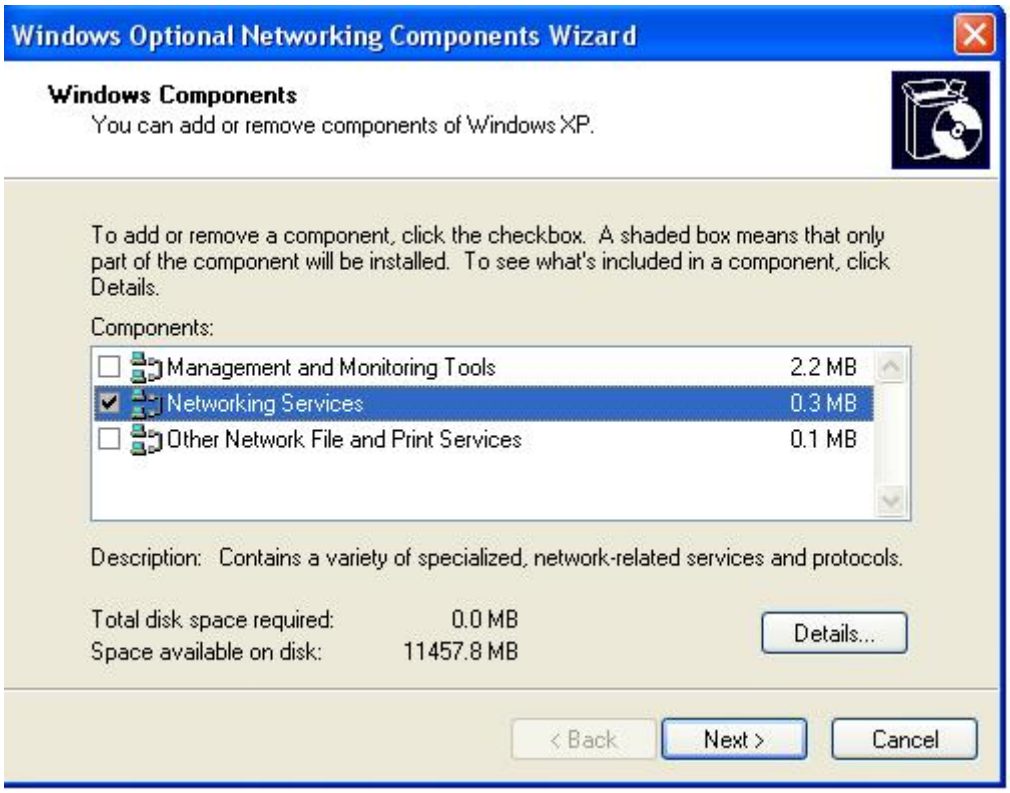
Step 2: Double-click Network Connections.

Step 3: In the Network Connections window, click Advanced in the main menu and select Optional Networking Components ….



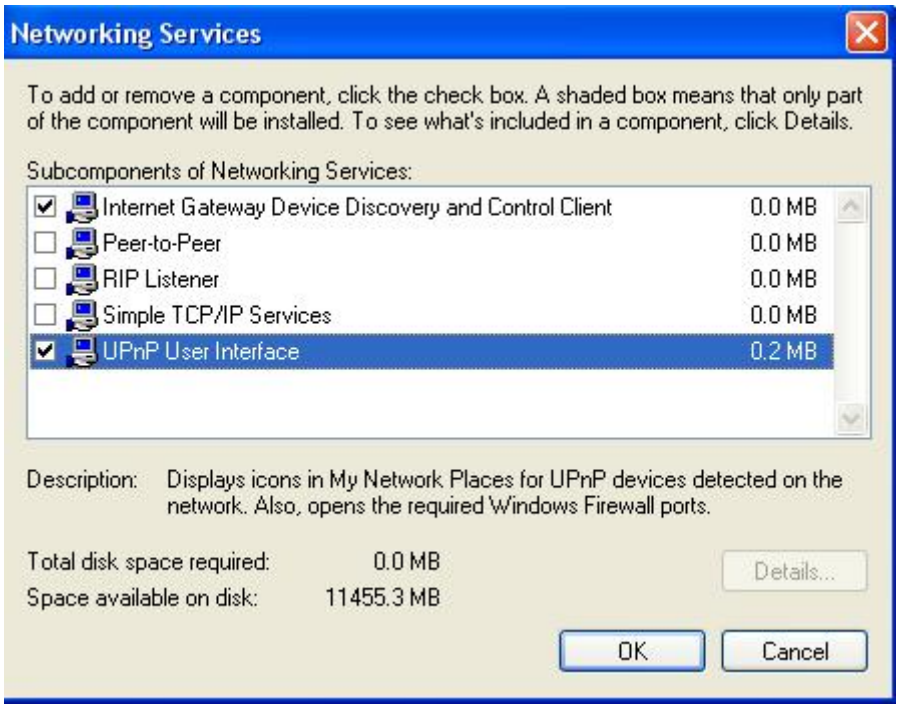
The Windows Optional Networking Components Wizard window displays.

Step 4: Select Networking Service in the Components selection box and click Details.


Windows Optional Networking Components Wizard
Windows Components
You can add or remove components of Windows XP.
To add or remove a component, click the checkbox. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Components:
Management and Monitoring Tools 2.2 MB
Networking Services 0.3 MB
Other Network File and Print Services 0.1 MB
Description: Contains a variety of specialized, network-related services and protocols.
Total disk space required: 0.0 MB
Space available on disk: 11457.8 MB
Details...
< Back
Next >
Cancel

Step 5: In the Networking Services window, select the Universal Plug and Play check box.

Step 6: Click **OK** to go back to the Windows Optional Networking Component Wizard window and click **Next**.

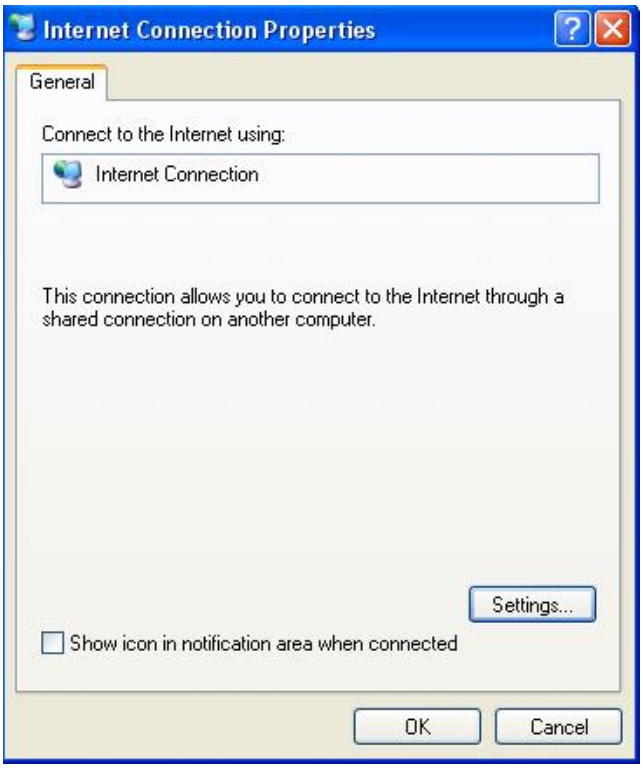

Networking Services
To add or remove a component, click the check box. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Subcomponents of Networking Services:
Internet Gateway Device Discovery and Control Client 0.0 MB
Peer-to-Peer 0.0 MB
RIP Listener 0.0 MB
Simple TCP/IP Services 0.0 MB
UPnP User Interface 0.2 MB
Description: Displays icons in My Network Places for UPnP devices detected on the network. Also, opens the required Windows Firewall ports.
Total disk space required: 0.0 MB
Space available on disk: 11455.3 MB
Details...
OK
Cancel

Auto-discover Your UPnP-enabled Network Device

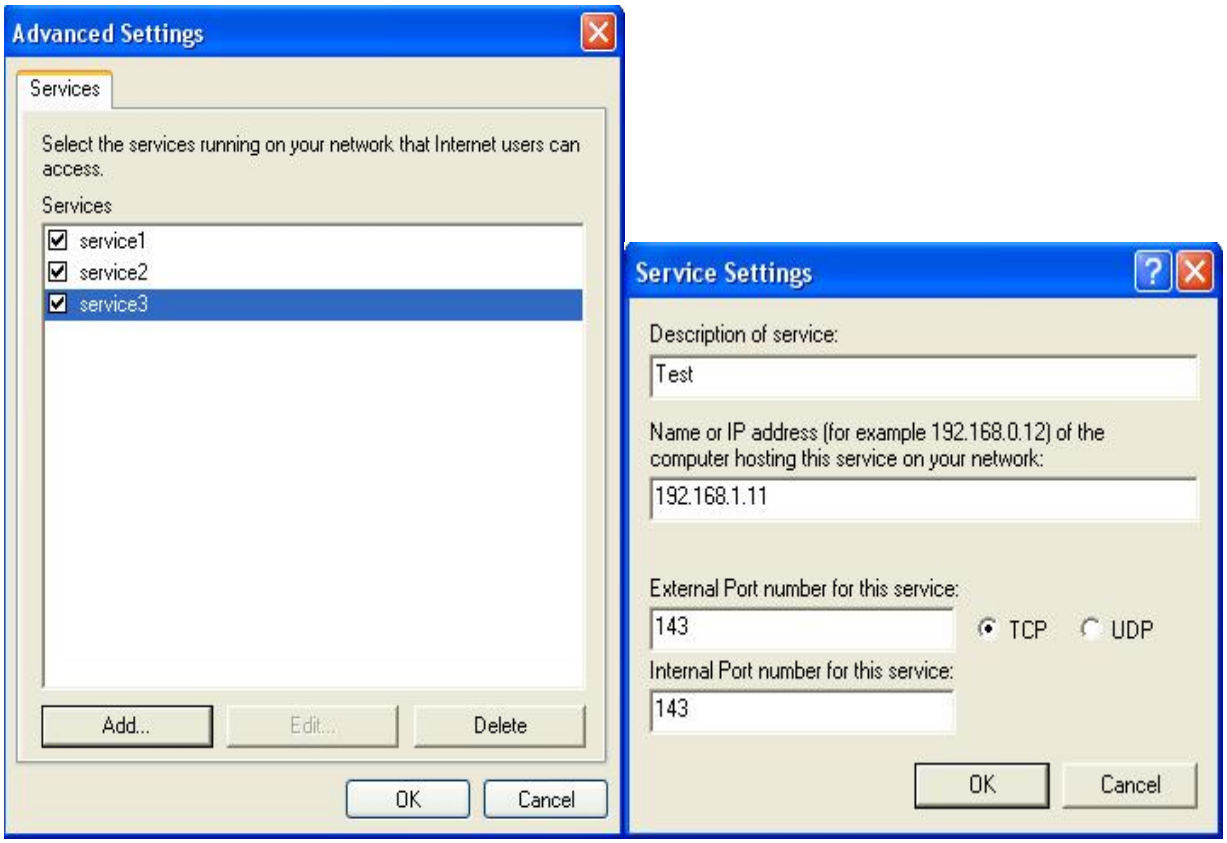
Step 1: Click start and Control Panel. Double-click Network Connections. An icon displays under Internet Gateway.

Step 2: Right-click the icon and select Properties.

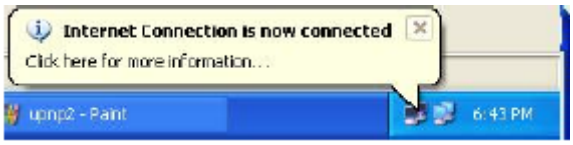
Step 3: In the Internet Connection Properties window, click Settings to see the port mappings that were automatically created.


Internet Connection Properties
General
Connect to the Internet using:
Internet Connection
This connection allows you to connect to the Internet through a shared connection on another computer.
Settings...
Show icon in notification area when connected
OK
Cancel

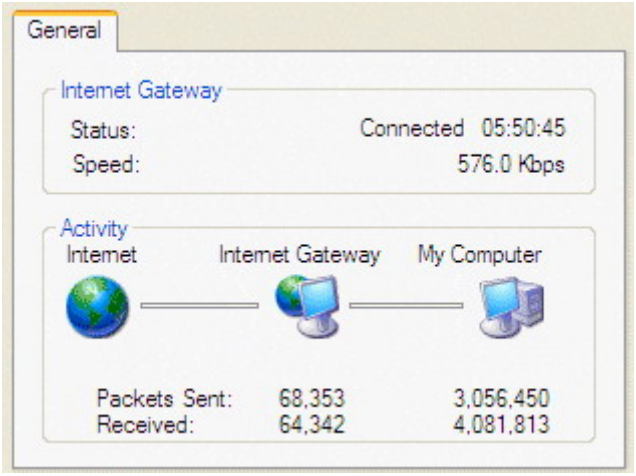
Step 4: You may edit or delete the port mappings or click Add to manually add port mappings.



Step 5: Select Show icon in notification area when connected option and click OK. An icon displays in the system tray



Step 6: Double-click on the icon to display your current Internet connection status.



Web Configurator Easy Access

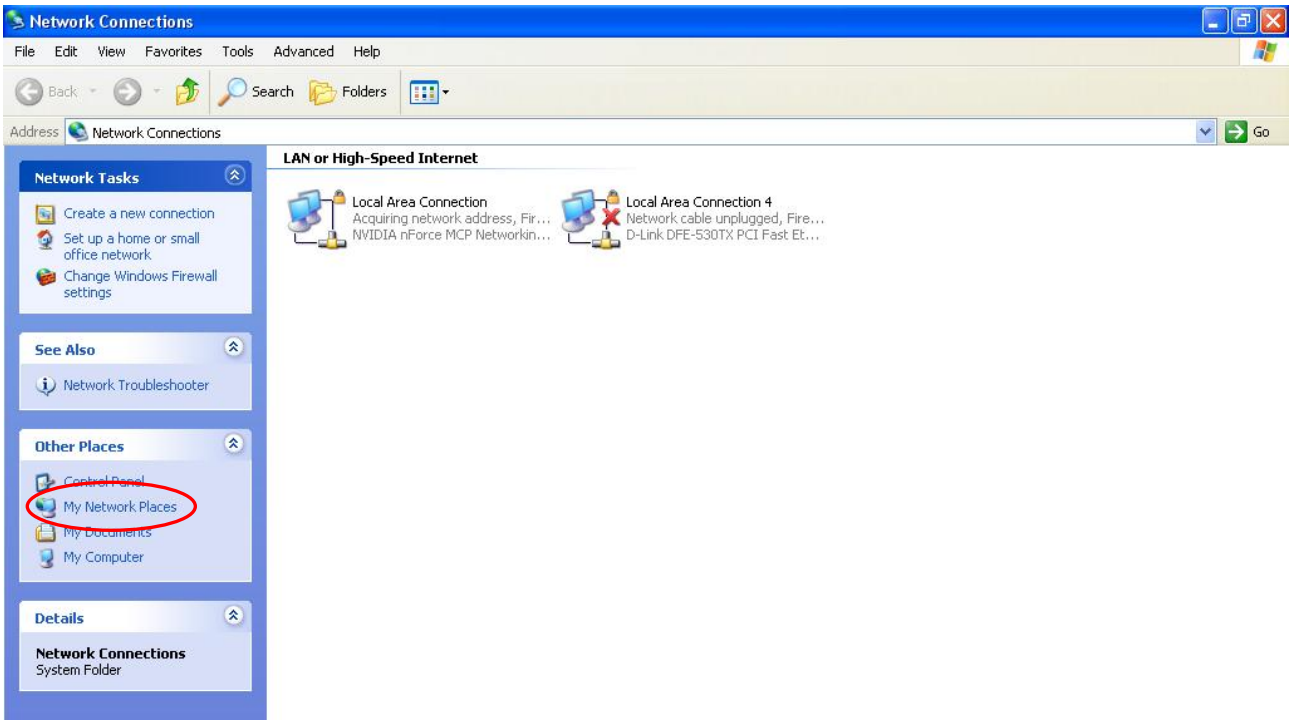
With UPnP, you can access web-based configuration for the BiPAC 7300(N) without first

finding out the IP address of the router. This helps if you do not know the router's IP address. Follow the steps below to access web configuration.

Step 1: Click Start and then Control Panel.

Step 2: Double-click Network Connections.

Step 3: Select My Network Places under Other Places.



Step 4: An icon describing each UPnP-enabled device shows under Local Network.

Step 5: Right-click on the icon of your BiPAC 7300(N) and select Invoke. The web configuration login screen displays.

Step 6: Right-click on the icon of your BiPAC 7300(N) and select Properties. A properties window displays basic information about the BiPAC 7300(N).

5.3.9.6 IGMP

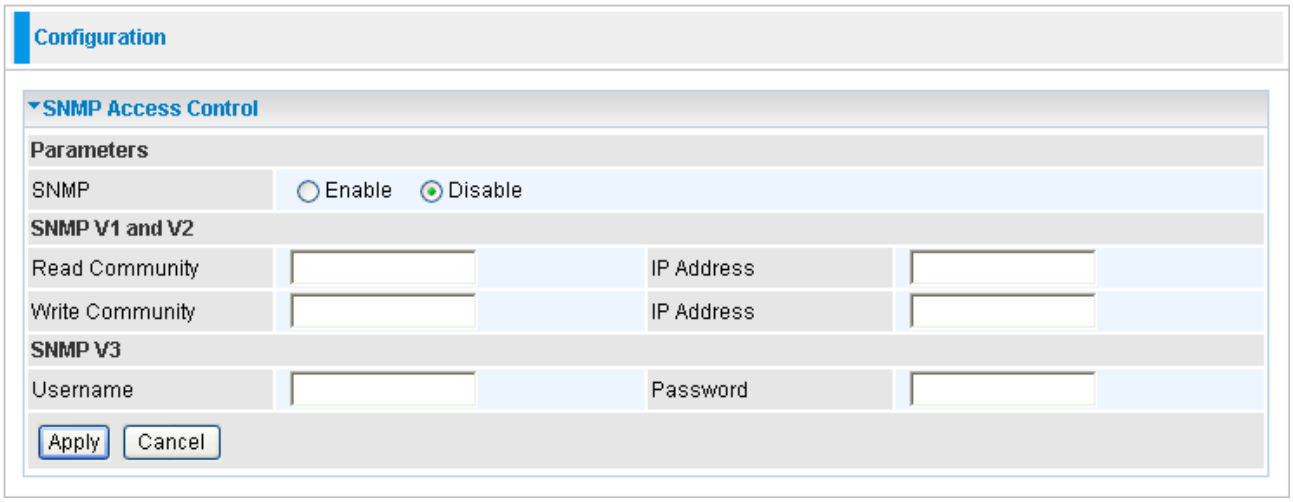
IGMP, known as Internet Group Management Protocol, is used to management hosts from multicast group.

IGMP Proxy: Accepting multicast packet. Default is set to **Disable.**

IGMP Snooping: Allowing switched Ethernet / Wireless to check and make correct forwarding decisions. Default is set to **Disable.**

5.3.9.7 SNMP Access Control

Software on a PC within the LAN is required in order to utilize this function – Simple Network Management Protocol.



SNMP V1 and V2:

Read Community: Specify a name to be identified as the Read Community, and an IP address. This community string will be checked against the string entered in the configuration file. Once the string name is matched, user obtains this IP address will be able to view the data.

Write Community: Specify a name to be identified as the Write Community, and an IP

address. This community string will be checked against the string entered in the configuration file. Once the string name is matched, users from this IP address will be able to view and modify the data.

Trap Community: Specify a name to be identified as the Trap Community, and an IP address. This community string will be checked against the string entered in the configuration file. Once the string name is matched, users from this IP address will be sent SNMP Traps.

SNMP V3:

Specify a name and password for authentication. And define the access right from identified IP address. Once the authentication has succeeded, users from this IP address will be able to view and modify the data.

SNMP Version: SNMPV2c and SNMPv3

SNMPv2c is the combination of the enhanced protocol features of SNMPv2 without the SNMPv2 security. The "c" comes from the fact that SNMPv2c uses the SNMPv1 community string paradigm for "security", but is widely accepted as the SNMPv2 standard.

SNMPv3 is a strong authentication mechanism, authorization with fine granularity for remote monitoring.

Traps supported: Cold Start, Authentication Failure.

The following MIBs are supported:

From RFC 1213 (MIB-II):

☑ System group

☑ Interfaces group

☑ Address Translation group

☑ IP group

☑ ICMP group

☑ TCP group

☑ UDP group

☒ EGP (not applicable)

☑ Transmission

☑ SNMP group

From RFC1650 (EtherLike-MIB):

☑ dot3Stats

From RFC 1493 (Bridge MIB):

☑ dot1dBase group

☑ dot1dTp group

☑ dot1dStp group (if configured as spanning tree)

From RFC 1471 (PPP/LCP MIB):

☑ pppLink group

☒ pppLqr group

From RFC 1472 (PPP/Security MIB):

☑ PPP Security Group)

From RFC 1473 (PPP/IP MIB):

☑ PPP IP Group

From RFC 1474 (PPP/Bridge MIB):

☑ PPP Bridge Group

From RFC1573 (IfMIB):

☑ ifMIBObjects Group

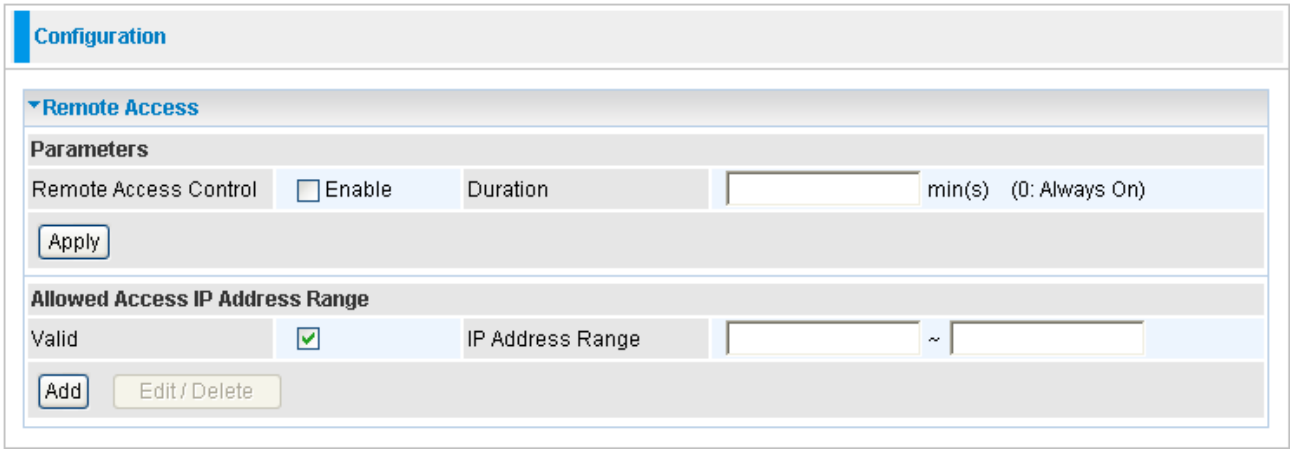
From RFC1695 (atmMIB):

☑ atmMIBObjects

From RFC 1907 (SNMPv2):

only snmpSetSerialNo OID

5.3.9.8 Remote Access



Remote Access Control:

Enable: Select Enable to allow management access from remote side (mostly from internet).

Duration: Set how many minutes to allow management access from remote side. Zero means always on.

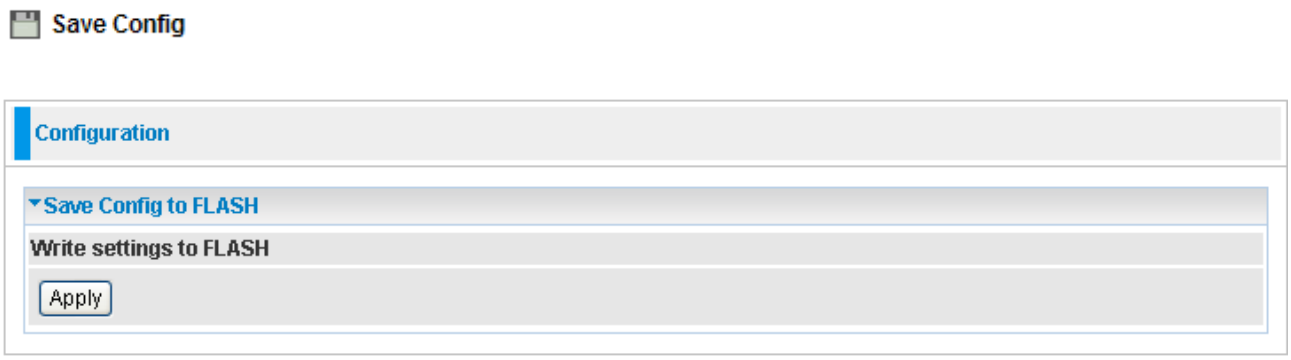
Allowed Access IP Address Range:

Valid: Select Valid to allow remote management from these IP ranges.

IP Address Range: Specify what ip address to be allowed to access device from remote side. Clink Add to insert management ip address list.

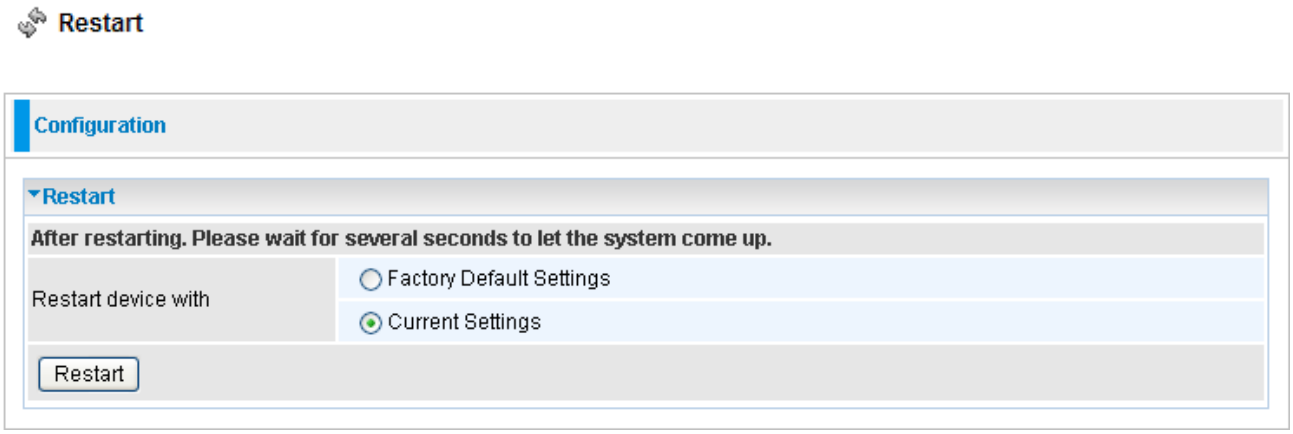
5.4 Save Configuration to Flash

After changing the router's configuration settings, you must save all of the configuration parameters to FLASH to avoid losing them after turning off or resetting your router. Click "**Save Config**" and click "**Apply**" to write your new configuration to FLASH.



5.5 Restart

Click **Restart** with option **Current Settings** to reboot your router (and restore your last saved configuration).



If you wish to restart the router using the factory default settings (for example, after a firmware upgrade or if you have saved an incorrect configuration), select ***Factory Default Settings*** to reset to factory default settings.

5.6 Logout

To exit the router's web interface, choose **Logout**. Please ensure that you have saved the configuration settings before you logout.

Be aware that the router is restricted to only one PC accessing the configuration web pages at a time. Once a PC has logged into the web interface, other PCs cannot get access until the current PC has logged out of the web interface. If the previous PC forgets to logout, the second PC can access the page after a user-defined period, by default 30 minutes. You can modify this value using the **Advanced – Device Management** section of the web interface. Please see the **Advanced** section of this manual for more information.

Chapter 6
Troubleshooting

If your ADSL Router is not functioning properly, you can refer first to this chapter for simple troubleshooting before contacting your service provider support. This can save you time and effort but if symptoms persist, consult your service provider.

Problems starting up the router

Problem	Corrective Action
None of the LEDs are on when you turn on the router.	Check the connection between the adapter and the router. If the error persists, you may have a hardware problem. In this case you should contact technical support.

Problems with the WAN Interface

Problem	Corrective Action
Initialization of the PVC connection ("linesync") failed.	Ensure that the telephone cable is connected properly from the ADSL port to the wall jack. The ADSL LED on the front panel of the router should be on. Check that your VPI, VCI, encapsulation type and type of multiplexing settings are the same as those provided by your ISP. Reboot the router. If you still have problems, you may need to verify these settings with your ISP.

Frequent loss of ADSL linesync (disconnections).	Ensure that all other devices connected to the same telephone line as your router (e.g. telephones, fax machines, analogue modems) have a line filter connected between them and the wall socket (unless you are using a Central Splitter or Central Filter installed by a qualified and licensed electrician), and ensure that all line filters are correctly installed and the right way around. Missing line filters or line filters installed the wrong way around can cause problems with your ADSL connection, including causing frequent disconnections. If you have a back-to-base alarm system you should contact your security provider for a technician to make any necessary changes.

Problems with the LAN Interface

Problem	Corrective Action
Can't ping any PCs on the LAN.	Check the Ethernet LEDs on the front panel. The LED should be on for a port that has a PC connected. If it is off, check the cables between your router and the PC. Make sure you have uninstalled any software firewall for troubleshooting. Verify that the IP address and the subnet mask are consistent between the router and the workstations.